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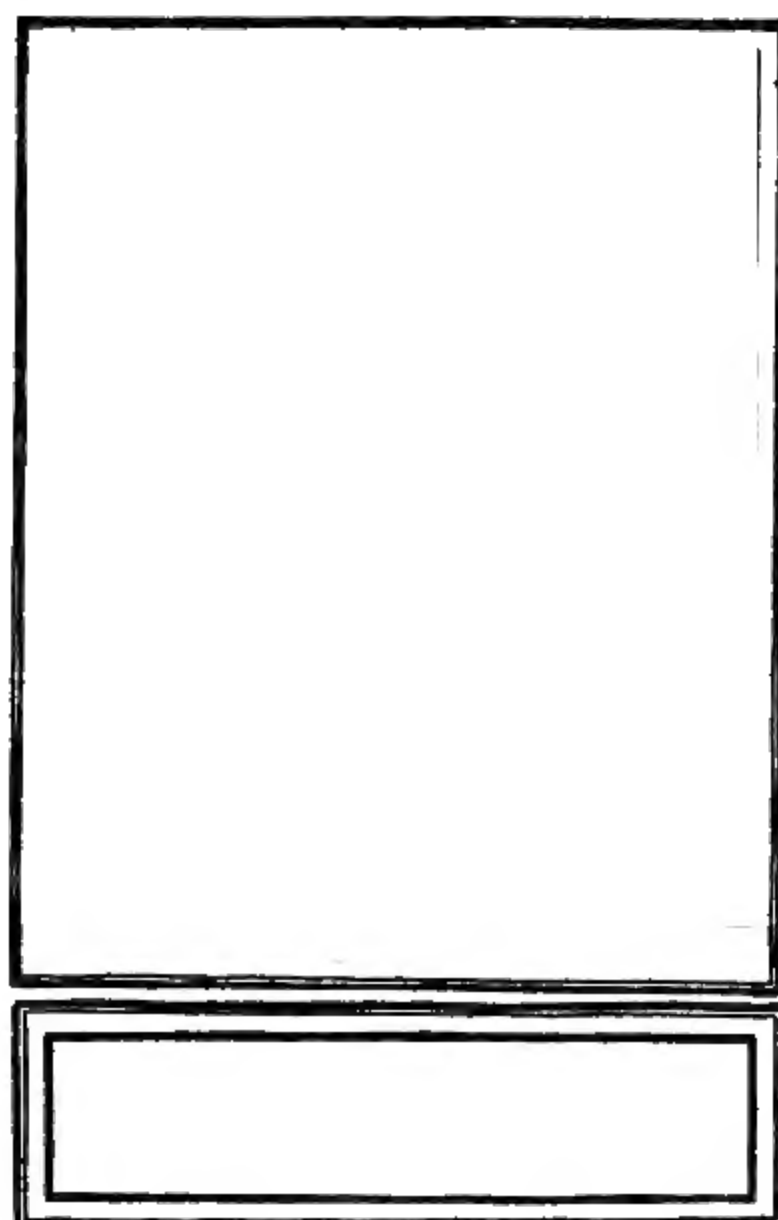
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THE CUTLERY TRADES



OLD WATER-DRIVEN GRINDING WHEEL, NEAR SHEPPFIELD.

THE CUTLERY TRADES

AN HISTORICAL ESSAY IN THE ECONOMICS
OF SMALL-SCALE PRODUCTION

BY

G. I. H. LLOYD, M.A.

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WITH 16 ILLUSTRATIONS AND 3 MAPS

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TO THE
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PREFACE

THESE chapters are the outcome of an inquiry begun when I was occupied in the teaching of Economics in the University of Sheffield. I there found myself fascinated by the sharp contrast presented by the two great staple trades of the locality—the ancient cutlery trades on the one hand and the modern heavy steel industry on the other—exemplifying, as they do, two antithetical types of organization and two widely divergent stages of industrial evolution. It has seemed worth while to bring together an historical account of these older trades, and to study in particular those rapidly disappearing features which appear to be survivals from an earlier industrialism. The main interest of the book is thus retrospective—a fact sufficiently indicated by the nature of the illustrations—though the examination of the present technical and commercial situation of the trades has not been neglected.

While the foreground of my picture is necessarily monopolized by one particular group of industries, I have endeavoured, by means of allusions to the parallel development of other comparable trades, to give it a setting which will serve to suggest the unity of all industrial history. The result will, I hope, prove of service to those who have learned

to seek in the story of the past the clue to the present complexities of things economic.

The pen drawings with which the book is illustrated afford a vivid pictorial record of the older methods of cutlery manufacture. They are the work of Mr. Arthur Lismer, and are, with few exceptions, faithful interpretations of my own photographs.

My obligations to the written work of others have been fully indicated in footnotes. I must, however, make special mention of my indebtedness to Mr. R. E. Leader's monumental work on "The History of the Company of Cutlers in Hallamshire," and express my thanks for his kindly encouragement. To my good friends among the cutlery workers of Sheffield, and to all others who have helped me, I wish to offer my grateful remembrances, especially to Mr. W. T. Freemantle for access to his unique and comprehensive library of Sheffield books. Finally, I have to thank Dr. G. C. Moore Smith for helping me with references to Elizabethan literature, and, still more, for his steadfast friendship and sympathy, which have proved an unfailing stimulus in my work.

G. I. H. LL.

THE UNIVERSITY OF TORONTO,
August, 1913.

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THE CUTLERY TRADES

CHAPTER I

THE OLDER FORMS OF INDUSTRY

THE study of an individual trade, considered in isolation from other trades, can only yield a result as partial in its significance as is a single thread abstracted from a woven tapestry ; to attain a full understanding, the selected trade must be viewed in its setting in the entire fabric of industrial life, and its history must be related to the broad trend of economic progress as a whole. It will be well for us, then, by way of prelude to the detailed and specialized inquiries which await us, to begin by getting a bird's-eye view of the whole procession of industrial history, and by recalling to our minds the predominant types of industrial organization which have characterized the successive stages of economic development.

The slow evolution of industrial forms is of course far from following a uniform or simple progression. It presents no sharp divisions or sudden transitions, neither does the prevalence of one industrial type exclude the presence of others. For the classification of such types we must therefore seek an historical rather than a logical basis, basing our definitions on the leading characteristics of industrial organization

THE CUTLERY TRADES

at different periods. We shall then have a rough standard by which to estimate the continuous though irregular development of a single industry, regarded historically, as well as a key to the analysis of its modern industrial structure, in which newer forms are found overlying and combining with the old.

✓ The chief characteristics which serve to distinguish one industrial type from another are the following : the scale of production, and the width of the market ; the progressive subordination of the industrial ranks, and the intensification of social distinctions ; the specialization and aggregation of labour force ; the separation of the functions of the merchant, the capitalist, and the business manager, respectively, from that of the artisan, and from one another ; the increase of fixed capital, and its concentration into relatively fewer hands ; the standardization of products, and the employment of machinery ; the extensive application of mechanical motive power to industry. By a study of these features the various forms of industrial structure can be separated into four broad groups, which a well-established terminology characterizes as i. the System of Household Production : ii. the Handicraft System : iii. the Domestic System : and iv. the Factory System—in which latter is included the simpler stage of Manufacture as well as the more complex Machine Industry. This classification has to serve the purpose of representing the complex differentiation of form, function, and structure which distinguishes the highly organized and more primitive forms from one another.

i. By Household Production it is convenient to indicate the internal economy of an industrial group, whether united by blood relationship or otherwise,

which produces from its own resources and for its own consumption the goods required by its members. It does not necessarily exclude the employment of hired labour to a subordinate extent. It is a system of archaic simplicity, and is found most commonly among primitive peoples and at early periods. It must have prevailed, for example, in the self-contained manorial household whether of the lord or the villain. The typical manor or parish could depend upon its own resources to provide the greater part of the necessary articles of consumption. The arable land yielded wheat, barley, oats, and rye. There was ample pasture for the cattle, sheep, or goats, while the pigs roamed the woods in search of acorns and beech mast. Among the staple products of the community were flour, cheese, honey, and bacon. The woodlands supplied not only fuel, but also the timber needed for agricultural implements. Hemp was grown to make rope for harness; flax to supply the housewife with linen thread; wool for the production of rough cloth. Among the villains were those who could use the arts of the weaver, the leather-dresser, the shoemaker, the carpenter, the wheelwright, and the smith. Everything was home-grown and home-made except such commodities as salt, iron, mill-stones, tar, etc., which could only be procured from outside, and such simple luxuries as were obtainable at the periodic market or fair.

For many staple articles, such as coarse woollen goods for family consumption, this system of production remained the rule, at least in village life, until the development of the factory system. This is true of all scattered communities, and is not peculiar to any one country. Thus, for example, Hamilton's

"Report on Manufactures" describes the industrial activity of the United States in 1790 as "a vast scene of household manufacturing," much of which belonged to this primitive industrial type. He tells us that in a number of districts by far the greater part of the clothing of the inhabitants was "made in the household way." The difficulties of transport over bad roads made industrial independence a necessity, and the people had no alternative to raising their own flax and wool and making their own apparel. Other crafts were, however, more advanced, and the working of wood, leather, and metals was carried on by skilled artisans in villages. The local store, no doubt, carried on a small traffic in luxuries, and in things which could not be produced locally, such as salt or rum.¹

Even to-day the family circle supplies the industrial equivalent to the ancient productive plan in the numerous domestic activities which supply "home-made" articles, and the term may perhaps be extended to include the self-contained production of wider social groups, such as penal colonies or monasteries, or even the secondary productive establishments of great industrial corporations, as, for example, the construction of rolling-stock by a railway, or the manufacture of paper by a journalistic enterprise. These modern exemplars, however, especially those of the latter type, are in reality governed by the commercial situation of the external public markets, and their significance lies chiefly in their relation to the most complex developments of modern industrialism.

II. With the relaxation of feudal bonds, and the

¹ "A Century of Population Growth" (Census Bureau, Washington), 26.

settlement of the emancipated workers in the towns, the latter gradually passed from the status of feudal servitors to that of independent craftsmen. These men, wherever their numbers permitted, soon united in organizations, at first of a religious, and afterwards of a purely industrial character. Thus arose what we call the Handicraft System.

Handicraft was clearly distinguished from household production by the disposal of its products in a public market, or at least to consumers beyond the circle of the craft members, the claim of the crafts to an exclusive local monopoly being usually upheld by public policy.¹ In contrast to the later forms, on the other hand, it was marked by the independence of the master craftsman, by the direct sale by the producer to the consumer, and by the ownership by the craftsman of his tools and working materials.² Sometimes, no doubt, the consumer would supply his own materials, such as wool for the weaver, cloth for the tailor, or silver for the goldsmith, but such an arrangement could not affect the industrial independence of the master craftsman.

A handicraftsman is best defined as one who "works for the consumer of an article in the place where both parties reside."³ The term is thus virtually restricted to production which is direct and purely local, where a master craftsman, assisted by perhaps a journeyman or apprentice, produces the

¹ See Unwin, "Industrial Organization," 91, 186.

² Compare the definition of "Handwerk" given by Held, "Zwei Bücher zur socialen Geschichte Englands," 542; also Schmoller, "Jahrbuch für Gesetzgebung," xiv. 1047.

³ "Comparative Account of the Population of Great Britain in 1801, 1811, 1821, and 1831" (Parliamentary Paper of 1831, Ed. Rickman), p. 7.

goods which he himself sells to the consumer. The craftsman is at once workman, foreman, employer, capitalist, merchant, and retailer, but the latter functions are all subordinate to his acquired skill in manual labour. "When we speak of a craftsman to-day," says Bücher, "we have in mind a business undertaker on a small scale, who has passed by regular stages of transition from apprentice to journeyman, and from journeyman to master workman, who produces with his own hand and his own capital for a locally limited circle of customers, and into whose hands flows undiminished the whole produce of his labour."¹ These definitions must not, of course, be too rigidly interpreted. The restriction to a local market under handicraft was not absolute, and in any case the visits of the craftsman to fairs, or the occasional dealings with chapmen or merchants from elsewhere, brought him into touch with a wide circle of consumers. It was this very extension of dealings beyond the limits of custom production which tended towards the standardization of products, and so paved the way for the introduction of a larger scale of enterprise. There was, in fact, a regular transition from pure handicraft to the stage (which marked the general supersession of the older system) in which the bulk of the product was sold to middlemen or dealers. In Germany the narrow restriction to a local market was made more persistent than in England, and the decay of handicraft was longer averted, by reason of the existence of the numerous territorial barriers to free commercial intercourse.² Handicraft thus belongs pre-eminently to

¹ "Industrial Evolution," 151.

² Thun, "Die Industrie am Niederrhein," 246. The traditional restrictions on German trade and industry survived until the estab-

the gild organization, and just as household production prevailed in the village community, so handicraft was universally established under the gilds of the mediæval town. Wherever, as in Spain and Russia, town life was undeveloped, handicraft, too, was unimportant.¹

What, then, were the merits or advantages, economic and social, of this form of industrial organization? The idealistic glamour which attaches to the distant past has given the notion of handicraft a strong hold upon popular sentiment and imagination. To most people it represents, if not the ideal productive system, one which had many social advantages not found in those which have superseded it. It presents a picture of harmonious industrial solidarity, contrasted with the antagonism between "capital" and "labour" in modern times: of a system of steady social progression, compared with the fixity of status caused by modern class barriers: of a high standard of artistic excellence and individuality of product, as against the mechanical multiplication of ornamental wares devoid of any æsthetic significance: of all-round capacity, as contrasted with a restricted mechanical facility in a fragmentary industrial occupation: lastly it stands for the finer type of character of the independent master-craftsman, compared with that of the worker who is merely a link in a chain of specialized processes, and subservient to the discipline of a vast lishment of the general industrial code (*Gewerbe Ordnung*) of the North German Confederation on June 21st, 1879, by which local monopolies and other industrial privileges were abrogated. For text of law see "Consular Reports on Condition of Industrial Classes in Foreign Countries," 1870, pp. 101-41.

¹ Bücher, *loc. cit.*, 171. Cf. "Handwörterbuch der Staatswissenschaft," Dritte Auflage: "Gewerbe."

mechanism. Hence the far-reaching cry for the revival of handicraft, for a return to artistic work, and for economical motive power on a small scale with which to facilitate the re-establishment of village industries.

When, however, we submit this popular conception to the test of historical realities we find that the vaunted superiority of handicraft is largely fictitious. Not only in productive efficiency is the modern organization beyond comparison superior, but it may well be doubted whether the social and ethical benefits which are generally assumed as peculiar to the handicraft system do not really obtain more widely under the factory system proper. How far the craft organization of the fourteenth century was from fulfilling this ideal of social and economic equality is shown not only by the separation of the crafts into "greater" and "lesser" mysteries, and by the frequent subordination of one to another, but also by the differentiation of classes within each craft. In the popular notion of handicraft these distinctions are ignored. In the first place the emphasis laid on the industrial independence of the gild master has led to an implied contrast between the handicraft system and the so-called wage system. Clearly no such antithesis can be sustained; for not only did handicraft arise out of wage-work, but, even before the time when the journeymen outnumbered the masters, wage-work occupied an important place in the gilds. Of course a period of service as journeyman was often but a normal stage in the progression to the position of master, but it is now known that a class of life-long wage-earners existed in many trades even

in the fourteenth century, not only in England, but throughout Western Europe, showing that it was no longer possible for every journeyman to look forward to setting up on his own account.¹ Thus, for example, we find among the ordinances of the London Cutlers in 1380 that definite provision was made for the control of a distinct class of journeymen,² while in the cloth trade and in other crafts disputes between the masters and their assistants are recorded from 1350 to 1362 which are closely analogous to modern strikes.³ In the fifteenth and sixteenth centuries there are numerous indications of separate organizations established by the journeymen which afford further evidence of the magnitude of this class.⁴

The degree of such industrial stratification bore a specially close relation to the extent to which the enterprise involved a large scale of operation and consequent control of extensive capital. This may best be illustrated by the example of the building trade, which was the earliest to attain capitalistic standing. In the case of small buildings, such as private dwellings, it was the usual practice for the owner himself to act as employer; he supplied the necessary capital and engaged craftsmen to execute the work. For more important operations, however, such as the building of a cathedral or a palace, the chief master mason or carpenter was responsible, under the architect's direction, for the work of a

¹ Ashley, "Economic History," vol. i., part 2 (in American edition, vol. ii.), 99.

² Unwin, "Gilds of London," 91.

³ Ashley, *ib.*, i., pt. 2, 103. Unwin, "Industrial Organization," 49.

⁴ Ashley, *ib.*, i., pt. 2, 123. Unwin, *ib.*, 50.

body of assistant craftsmen. Sometimes, again, the whole work was executed by contract. Thus the number of dependent workmen in this trade was specially great, and it was natural that journeymen's associations should make their appearance here earlier than elsewhere. The importance of these associations is indicated by the special legislation to which their activities gave rise. Thus an Act of 1360-1 prescribes official rates of payment for the building trades, and prohibits the "Alliances and Covines" and all "Congregations, Chapters, Ordinances, and Oaths" of masons and carpenters.¹ Again, the labour statute of 1425 is specifically directed against "the yearly Congregations and Confederacies made by the masons in their general chapters and assemblies."² A century later the "Act touching victuallers and handicraftsmen" of 1549³—the only general statute against labour combinations previous to 1799—shows that the movement had then become general. In set terms the indictment runs as follows:

"Forasmuch as . . . artificers, handicraftsmen, and labourers have made confederacies and promises, and have sworn mutual oaths, not only that they should not meddle with one another's work and perform and finish that another hath begun, but also to constitute and appoint how much work they shall do in a day, and what hours and times they shall work, contrary to the laws and statutes of this realm . . ."

This Act imposed heavy penalties for any attempt to regulate either wages, hours, or other conditions of labour by collective action. It was, however, applicable to masters as well as to journeymen.

¹ 34 Ed. III., c. 9.

² 3 Hen. VI., c. 1.

³ 2 and 3 Ed. VI., c. 15.

Though the building trades figure thus prominently in the restrictive labour statutes, it was not because they enjoyed a monopoly of labour troubles. In many other trades the gild ordinances reflect a similar condition. As an example we may cite the clothworkers, whose journeymen were specifically prohibited, in the sixteenth and seventeenth centuries, from uniting in "assemblies, brotherhoods, congregations, and flockings together."¹

The separation between master and journeyman is not the only sign of class division within the gilds. Before the close of the fourteenth century the recognition of a subordinate fellowship of Yeomanry was a common feature of gild organization.² The yeomanry at first probably consisted of journeymen, but by the end of the sixteenth century its composition had so far altered that it represented the main body of the small masters and traders, in opposition to the oligarchy of wealthier individuals who dominated the craft.³ The Livery, as these latter were called, thus represented a distinct upper stratum of wealth and influence, while the rank and file of the small masters, whose resources were meagre, and whose livelihood was precarious, led a life of penurious labour, enjoying but few of those alleviations which are within the reach of the unskilled worker of to-day. It was these small masters, rather than the journeymen, who had to bear the brunt of the struggle with the

¹ Howell, "Conflicts of Capital and Labour," 62.

² Cunningham, "English Industry and Commerce" (2nd ed.), 1890, i. 318, 396.

³ Unwin, *ib.*, ch. ii., "Gilds of London," 224-30. Cunningham, i. 466.

wealthy traders and substantial masters which lasted throughout the sixteenth and seventeenth centuries, and it is they who supply the link which connects the gild with the trade union of modern times. An examination of the condition of these men and their journeymen—whose numerical predominance justifies us in regarding them as the really typical group under the handicraft organization—will make us chary of idolizing a system which placed the workers in a position not appreciably superior to that of the humbler ranks of labour in the modern city. We must remember that the appalling evils which accompanied the introduction of the factory system, and the rapid growth of vast urban populations, were in no way inherent or inevitable, and that the latter system when fully organized and carefully regulated is now seen to offer substantial advantages to the workers which are denied to their scattered brethren in the small industries conducted under more primitive forms of organization.

The handicraft system—at one time well-nigh universal—survives to-day only in the more obscure regions of the industrial world. The village blacksmith still presents a familiar example of the system, qualified by the extent to which he now purchases his horseshoes, nails, and other materials ready-made, and merely adjusts them. In the same way the joiner, formerly a true craftsman, is now usually supplied with machine-made doors, window-sashes, and mouldings of all kinds. Thus the true handicraft form prevails to-day only in trades which satisfy a restricted local demand, as, for example, the jobbing and repair work undertaken by the small cobbler,

tailor, and joiner, or in the trade of the small dairyman or baker, who is an independent producer and deals directly with the household. Other examples are furnished by trades which demand a peculiar excellence of artistic taste or manual skill, or which produce specialities in quantities too small to afford employment for a large establishment. In all such cases, however prosperous the more gifted of the workers may be, it cannot be said that they represent as a class the aristocracy of manual labour.¹

We may conclude this retrospect of handicraft by citing an attempt to make statutory provision for the preservation, in modern times, of the old handicraft spirit and organization. Incidentally, it will serve as a useful commentary on the difficulties which beset a chronological classification of industrial forms. We quote from the regulations at present governing the trade guilds of Rumania :²

“ TRADE GILDS.

“ A trade gild shall be an association of at least twenty-five craftsmen of one and the same craft.

“ Every person who carries on any of the trades subject to this Act, as well as the workers in factories with a skilled training, shall belong compulsorily to the trade gild of his particular craft.

“ The objects of the trade gild shall be as follows :

“ (a) To represent the interests of the craft, and to promote the idea of professional honour ;

¹ See Appendix I, “ Note on the Survival of Small-scale Industry.”

² “ Act respecting the Organization of Handicrafts ” (1912).

“ Bulletin of the International Labour Office,” vol. viii. p. 53.

“(b) To see that the apprentices and improvers learn the craft, and that the journeymen perfect their knowledge and skill ;

“(c) To arrange the examinations, with prizes for apprentices and improvers, as stipulated in the administrative regulations ;

“(d) To provide for the cleanliness of the apprentices, improvers, and journeymen ;

“(e) To see that the apprentices and improvers wear, sewn on their coats, the badge of their gild ;

“(f) To take steps to accustom the craftsmen to submitting the settlement of disputes arising between them to the arbitration committee ;

“(g) To take measures to enable the craftsmen to work even at those times when usually the trade is suspended or very poor, and to provide for the sale of the goods produced by the craft ;

“(h) To take measures for as complete an organization as possible of the credit and savings banks for craftsmen.”

III. The decay of the gild system began in the first half of the fifteenth century, and its transformation from this time was governed by the growth of trading capital on the one hand, and of industrial capital on the other, and the consequent struggle of the small master against the merchant and the employer. The beginnings of a national as compared with a local market organization were already evident in the fifteenth century, and from the sixteenth to the middle of the nineteenth century the domestic system was extensively prevalent.¹

The concentration of economic power in the hands

¹ Cf. Ashley, i. pt. 2, 220.

of substantial merchants was an inevitable concomitant of the development of intercourse and the extension of markets. This led in turn to the general supersession of handicraft by the type of industry which we know under the somewhat ambiguous and unsuitable name of the Domestic System. The term is of course derived from the employment of the workers in their own homes, or in workshops provided by themselves, and is usually contrasted with the congregated form of labour found in the factory of a modern capitalist employer. As contrasted with handicraft, on the other hand, the distinctive characteristics of the domestic system are seen in the severance of the merchant function from the mechanical technique, the advent of a middleman who interposes between producer and consumer, and the partial loss of the independence, initiative, and leadership of "the manufacturer."¹ The producer is still a small master, and provides employment for his family and possibly for a few apprentices or journeymen. He still directs and controls the actual execution of the work, and provides his own tools, but the materials of his work are procured from a factor or merchant to whom the finished product is delivered, and on whose orders the worker is dependent, wages being paid according to an agreed piece-work scale. The merchant, who is the wealthier and more powerful individual, assumes the commercial risks, while the workers' commercial interests are determined by the abundance or scarcity of work rather than by the sale-

¹ Using the term in its former signification. Cf. Johnson's Dictionary (1755): "Manufacturer; a workman, an artificer." In the eighteenth century artisans were commonly referred to as "master manufacturers."

ability of product, which latter is the true measure of commercial risk.¹ These sharp distinctions will help us to define a type, but we must not forget that the transition from one form to another is gradual and continuous. Handicraft passes by small gradations into the domestic system, and many intermediate stages are to be found. One worker may even represent both phases simultaneously, producing for a small circle of customers on his own account, and at the same time dealing with merchants or other intermediaries.

In the eighteenth century such domestic manufacturers were to be found distributed throughout the British Isles, usually combining the cultivation of a garden or small agricultural holding with their industrial pursuits. The classical example is furnished by the condition of the woollen industry of Yorkshire towards the close of the eighteenth century, which is thus described:² "The manufacture is conducted by a multitude of master manufacturers, generally possessing a very small, and hardly ever any great extent of capital. They buy the wool of the dealer, and in their own houses, assisted by their wives and children, and from two or three to six or seven journeymen, they dye it (when dyeing is necessary) and through all the different stages work it up into undressed cloth." An extended system of supplying materials on credit prevailed in this trade, which made it easy for a young man to establish himself as a little master working for a merchant. The products of the more prosperous clothiers were, however, disposed of

¹ Cf. Schönberg's "Handbuch" (4th ed.), ii. 488.

² "Report of Committee of the House of Commons on the Woollen Manufactures of England" (1806).

in the public "cloth halls"¹ or market-places of Leeds, Bradford, Halifax, and Huddersfield, where they were bought by merchants in whose workshops, or in those of a special class of "dressers," the cloths were put through the finishing processes, and by whom they were distributed through the channels of trade. This was the system so much admired by Daniel De Foe, who in 1725 found the country near Halifax "one continued village," and saw "at every house a Tenter, and on almost every Tenter a piece of cloth, Kersie, or Shalloon," with abundance of dyeing houses, scouring shops, etc., in the vicinity: the houses were "full of lusty fellows, some at the Dye Vat, some at the Loom, others dressing the Cloths: the women and children carding and spinning." These people, he says, live long, for "they enjoy a good air."²

An organization similar to that of the woollen trade prevailed in a large number of other industries in the eighteenth century; it was to be found, for example, in the silk industry of Spitalfields and Coventry, and in the hat and boot trades, in all of which small masters worked up materials given out by merchants.³ The same kind of organization abounds at the present time in the less conspicuous departments of town economy. It is exemplified by multitudes of small producers, such as those who work for the better-class

¹ The dates at which the principal cloth halls were established afford a useful indication of the period at which this system of work became prevalent: Halifax Cloth Hall, 1700; Leeds White Cloth Hall, 1711; Leeds Mixed Cloth Hall, 1775; Huddersfield Cloth Hall, 1765; Bradford Cloth Hall, 1773.

² "Tour through Great Britain" (7th ed.), vol. iii., Letter III., 145-6.

³ Held, *loc. cit.*, 560.

master tailor, milliner, or bootmaker. Much furniture is also produced under these conditions.

It is under this general type of industry that much of the cutlery and file manufacture of Sheffield is still carried on.

Turning to the question of the relative advantages of the domestic and factory systems, we may note that at the time when factory organization was beginning to encroach on the domestic system, the merits of the former were generally estimated very highly. The praise bestowed by De Foe was freely echoed by those more intimately associated with the system. Thus, in 1806, the master clothiers resolved that "the domestic system is highly favourable to the cultivation of paternal, filial, and fraternal affections—the springs of family happiness,—and to the cultivation of good moral and civil habits—the sources of public tranquillity."¹ It must not be supposed, however, that the prevailing conditions justified a picture of Arcadian happiness and virtue. Robust physique these workers may have enjoyed to a greater extent than the early factory operatives before the days of efficient sanitary regulation, but in point of intelligence and domestic virtue they were often markedly inferior to the latter.² The domestic artisan had a sluggish mind in an active body; the early factory worker a highly stimulated intelligence in a body too often rendered anæmic and stunted by an unhealthy environment and excessive labour at a tender age. That the domestic worker enjoyed any substantial balance of advantages, except in rare instances, it is thus impossible to maintain, and the following descrip-

¹ Quoted by Held, "Zwei Bücher," 694.

² See Gaskell, "Artisans and Machinery," 1836, *passim*.

tion may perhaps be offered as an antidote to the foregoing eulogies : " The domestic labourer's home was far from the character poetry has given it. Huddled together in what poetry calls a cottage, and history a hut, the weaver's family lived and worked, without comfort, conveniences, good food, good air, and without much intelligence. Drunkenness and theft of materials made many a house the scene of crime and want and disorder. Superstition ruled, and envy swayed the workers."¹ Beyond this it must be said that employment under the domestic system was probably more irregular and intermittent than it is under the modern organization, in spite of the grave fluctuations to which the latter is subject. Changes of season and fluctuations of demand were more intense in their local influence, even if not as a rule so widespread in their application ; and these influences were aggravated in many cases by reliance on the motive power of wind or water, a circumstance which exposed industry to constant interruption as well from the influence of excessive as from that of deficient supply. Regularity is, after all, the keynote of factory employment, and the beneficial effects of the orderly discipline of a modern factory are strikingly evident wherever factory organization is found side by side with older forms.

The employment of female and juvenile labour, again, has been made the ground of disparaging comparisons in favour of the home-life of the domestic system. Whatever may be thought of the ethical advantage of employment in the home, it can at least not be denied that it was left for factory regulation to mitigate the worst evils of child labour ; in fact, it is

¹ Carroll D. Wright, " Factory System of U.S.," 18.

notorious that under no other system are abuses of this character susceptible of really efficient control. In the seventeenth century the arduous employment of young boys and girls was regarded not merely with equanimity, but was commonly accepted as a matter for general congratulation. Petty, for example, exults in the fact, vouched for by Chamberlayne, that the children of Norwich could earn £12,000 a year more than their maintenance.¹ Again, a hundred years later, we find Pitt boasting of the advantages to be derived from the early employment of children in manufactures.² Now that we have passed through the nightmare of cruelty to pauper and other children to which the introduction of factories gave rise, we have learned not only the need for, but also the efficacy of, a well administered system of supervision.

Lastly, in point of health there is no good ground for regarding the factory worker as at a disadvantage. True, there are occupations which expose the worker to the risk of serious disease or disablement, but these do not arise from the system of employment. Were the matter capable of statistical analysis it would probably be found that with all the disadvantages of urban life the factory worker as such enjoyed an improved position relatively to the artisan of the eighteenth or seventeenth century. An acute observer, writing when the transition from the domestic to the factory system of textile production was in full swing, thus sums up the comparison :

“A great mistake prevails in the minds of many persons as to the extent to which factory labour, which is now becoming the

¹ “Political Arithmetic,” ch. vi.

² Lecky, “England in the Eighteenth Century,” vi. 224.

characteristic feature of manufacturing employment, is unfavourable to the health and morals of a community or the happiness of domestic life. With regard to health, having seen the domestic weaver in his miserable apartment and the power-loom weaver in the factory, I do not hesitate to say that the advantages are all on the side of the latter. With regard to morals . . . the factory operatives in the great towns are superior to the classes who prefer lower wages and freedom from restraint. It has been said that factory labour is unfavourable to the happiness of a community so far as it depends upon domesticity. But domestic happiness is not promoted but impaired by all the members of a family muddling together and jostling each other constantly in the same room.”¹

On the whole we may conclude that the balance of advantage lies emphatically with modern factory employment, and we may even sympathize with the conclusion of Ure: “The factory system, instead of being detrimental to the comfort of the labouring population, is its great palladium.”²

iv. Just as the Domestic System marks the rise of the middleman, and of a trading function divorced from manual work in the production of goods, so the Factory System is differentiated by the appearance of the Undertaker, Enterpriser, or Business Manager, who assembles workpeople on his own premises, and, without participating in the mechanical labour, undertakes the business risks, the provision of materials, implements, machinery, and accommodation, and supervises the disposal of products. This transfer of dominant influence from Trader to Enter-

¹ Hickson, “Report on Handloom Weavers,” 1840, P.P. 639, p. 74.

² “Philosophy of Manufactures,” 329. Compare the full discussion in C. D. Wright: “Factory System of the United States,” p. 34 (Tenth Census, vol. ii.). See also Cooke Taylor, “Social Science Association, 1882,” p. 371 seq. McCulloch, “Essays,” 462.

priser is reflected even in the changed significance of the term "factory" itself. Originally a factory meant a dealer's store-house or a merchant company's trading station, and so a place where factors resided or met to negotiate for their masters or employers—the "factor" being commonly a commission agent for a substantial merchant.¹ Not till the nineteenth century did it imply a place where manufactures are carried on.

The separation of the merchanting and manufacturing elements, which is still fairly general under the factory system itself, is so far in contrast with the same division of functions under the domestic system that it does not transfer the main leadership and direction of the productive process from the undertaker to the merchant, nor create a domination under which the factory-owner is subjected to the necessity of occupying a secondary or subordinate position. The coming of the factory system, however, emphasized the growth of a new upper class in the industrial hierarchy, the employment of large capital being more and more an essential feature, though the development of Limited Liability has since weakened the association between the enterprise and capitalist functions. The factory system further represents an extension of the domestic system in the direction of greater aggregation and specialization of labour under unified management, and the multiplication of mechanical appliances and other aids for workers. Commercially it finds its counterpart in the opening up of vast international markets, just as the domestic system reflected the creation of national markets.

The typical factory master in England is closely

¹ "New English Dictionary." Also Owen's "New and Complete Dictionary of Arts and Sciences," London, 1754.

associated with the engineering and organizing aspect of the business, and represents the supreme technical knowledge of fabrication. At the same time he controls both the commercial organization and the designing of new wares. This English system is, broadly speaking, in contrast to the typical organization which prevails in Germany, where the supreme influence and control is usually that of the merchant, and where the undertaker is primarily the salesman.¹ This difference indicates a divergent line of inheritance and tradition. The English industries were founded upon technical excellence: those of Germany largely upon skill in marketing. Further, in the latter country the power and capital resources have been associated more generally with the merchant class, which gained its position in consequence of the more general and lengthened survival of the domestic system of production. The consequence of the contrast is that the English firm usually attaches supreme importance to excellence of technical fabrication, and aspires to acquire a reputation for excellence of workmanship; the German firm looks primarily to the saleableness of the product. The English firm is inclined to stand by its prices and resist mediocrity; the German firm is prepared to meet the most exacting competition in price among its commercial rivals. A generation ago it might fairly be said that the British firm stood for quality, while the German stood for cheapness even when attained at the sacrifice of excellence.² This, of course, is no longer the case,

¹ See Thun, "Die Industrie am Niederrhein," 249.

² "Für zahlreiche deutsche Industrien, für zahlreiche Branchen der betrachteten rheinischen Textil- und Metallwaaren-Industrien trifft das wort zu: billig und schlecht." Thun, *loc. cit.*, 249.

and to-day, in some industries, it is Germany who leads the way in industrial technique.

(It is worth while to follow Marx in distinguishing manufacture from the modern mechanical factory organization and its later developments. Manufacture is essentially characterized by the aggregation of labour and the division of employments under unified management. It implies the assemblage of what were once independent handicrafts in a single establishment under the control of a single capitalist manager, or the aggregation of workers in a single occupation under similar direction. Thus the joiner, the upholsterer, the turner and carver, the painter, the leather worker, and many other separate trades are all united in a carriage factory; conversely the manufacture of needles or paper, formerly performed by one worker, is split up into many separate and successive stages.

The distinction between manufacture and machine industry rests upon the extent to which the productive processes are dominated by the use of machinery; it corresponds generally to the difference between a machine and a tool. Perhaps the best way of expressing this difference is to say that a tool is an implement which serves directly to increase the effectiveness of the muscular power of the human hand, foot, etc.; that it serves but one individual at a time, and, so to speak, is personal to him. As soon, however, as an appliance transcends such simple functions and operates automatically, or with the manifold intensity of motive power external to the worker, or, again, as soon as many workers are required to operate a single appliance—a furnace, for example—we have a machine rather than a tool. Thus, while the tool is the servant

of the man, the man is the servant of the machine, and his activities are subsidiary to the amplitude and regularity of its mechanical operations.¹

The system of Manufacture, implying concentration of production by many hands, and far-reaching division of employments under unified management, is of course found long before the Industrial Revolution. In the seventeenth and eighteenth centuries it was applied to many important industries, and famous examples are to be found even in the Tudor period, when the markets for the staple products of wool and iron were sufficiently extensive to allow of a considerable concentration of labour. Thus, for example, the renowned cloth-making enterprise of John Winchcombe,—"Jack of Newbury"—who died in 1519, gave employment, so tradition asserts, to more than 1,000 persons, who were occupied in weaving, carding, spinning, dyeing, and fulling.² This represented a considerable investment of capital, even when compared with much later times. So too did one Stump of Malmesbury, a clothier of that town about 1542, utilize to their full capacity the spacious monastic buildings of the place in the same industry. Cuthbert of Kendal, Martin Brian of Manchester, and Hodgkins of Halifax may be mentioned as additional examples of a class of large employers who were the prototypes of the modern factory-owner.

Naturally this capitalistic form of enterprise did not harmonize well with the existing structure of industry. Not only did it elicit vigorous opposition, but it even gave occasion for parliamentary interference. The Act of 1555, for example, gave as a ground for

¹ Cf. Marx's discussion: "Capitalist Production," ch. xv.

² See Thomas Deloney. (Ed. Sievers: "Palæstra," vol. xxxvi.)

restricting the country clothier to the operation of not more than two looms the reason that—

“The weavers of this Realm have complained that the rich and wealthy clothiers do many ways oppress them ; some by setting up and keeping in their houses divers looms, and keeping and maintaining them by journeymen and persons unskilful, to the decay of a great number of Artificers which were brought up in the said science of weaving, their families, and household ; some by ingrossing of looms into their hands and possession and letting them out at such unreasonable rents as the poor artificers are not able to maintain themselves, much less their wives, family, and children ; some also by giving much less wages and hire for the weaving and workmanship of cloth than in times past they did, whereby they are enforced utterly to forsake their art and occupation wherein they have been brought up.”¹

At the time of the Commonwealth the woollen trade was still the chief industry of the country, and gave employment to a very large aggregate number. There were then many large individual businesses, some of which employed as many as 500 hands.² The lot of these workers at this time appears to have been far from enviable, and the contrast of their condition with that of the prosperous employers who “scorned for to toyl and moyl” gave rise to bitter jealousy.³

The silk trade also assumed considerable dimensions in the seventeenth century, and affords a further illustration of the expansion of the business unit. The great factory established by John Lombe in 1718 marks the crowning point of this development, and the beginning of the mechanical factory system.

¹ 2 and 3 Philip and Mary, c. 11.

² Nicholls, “Hist. of the Poor Law,” ch. vi.

³ Macaulay, “Hist. Eng.,” ch. iii.

The iron trade had attained some importance under the Tudors, and great technical advances had been made at that period, which were crowned in 1618 by Dud Dudley's utilization of coal for smelting. Dudley's invention was not generally adopted, however, for a hundred years, and meanwhile the growing scarcity of timber completely checked the expansion of the industry. The beginnings of large-scale industry only date from 1682, when Ambrose Crowley set up extensive ironworks near Newcastle, where he employed several hundred men. At the same time the Foley family owned and directed large works at Stourbridge.¹ A century later we have the foundation of the Carron Iron Works (1760), which, in 1792, employed 1,000 men and consumed 136 tons of coal a day. This marks the beginning of the era of rapid development in the industry which since this time has become the most conspicuous and fundamental department of national production.

It was in the eighteenth century that the manufacturing system attained its fullest extension, and Adam Smith has been well called by Marx the economist of the manufacturing period, in consequence of the stress he lays upon the division of labour and the relatively small importance he attaches to machine production. Towards the close of the century we still find in the woollen trade both the manufacturing and the domestic systems in operation. Under the former the master manufacturers, possessing very considerable capital, employed large numbers on their own premises and under their own supervision. In the West of England an intermediate stage prevailed in which, though there was full

¹ "Victoria County History of Worcestershire," ii. 269.

division of labour, the workers sometimes worked at home and sometimes in the masters' establishment. In neither case did the ownership of the goods rest with the workers. The survival of the domestic system, concurrently with the above, was rendered possible in Yorkshire by the establishment of public mills, which placed at the disposal of the domestic masters the complex and costly machinery which was now used to execute various processes formerly carried out by hand. Indeed, the few large factories which were in operation were engaged principally in the production of fancy goods and novel kinds of fabric, and the factory masters themselves were among the largest customers of the domestic clothiers for their staple products.

┐ The modern use of the term "Factory System" dates from the application of the steam-engine to a mechanically organized system of production. Ure's definition (1835) reflects the subsequent usage: "The term 'factory' designates the combined operation of many orders of workpeople, adult and young, in tending with assiduous skill a system of productive machinery continuously impelled by a central power. This definition includes such organizations as cotton-mills, flax-mills, silk-mills, woollen-mills, and certain engineering works, but it excludes those in which the mechanisms do not form a connected series, nor
└ are dependent on one prime-mover."¹ This formula distinguishes between machine industry and manufacture, both of which are included in the wide definition given by Carroll D. Wright: "The principle of a factory is that each labourer, working separately, is controlled by some associating principle

¹ Ure, "Philosophy of Manufactures," 13.

which directs his producing powers to effect a common result which it is the object of all collectively to obtain." ¹ It is disappointing that a writer of such authority should present us with a formula sufficiently nebulous to include any conceivable form of organized social activity.

We are not concerned here with the modern developments of large-scale industrial enterprise—the amalgamation of large concerns into giant federations or combines, the consequent centralization of administrative authority, and a "subdivision of employments" in regard to supervision almost as far-reaching as in the region of manual labour. Business finance, selling organization, works management—each of the main departments formerly united in the person of a single business manager or group of partners—are now elaborated into a chain of distinct businesses or professions, representing various orders of intelligence and responsibility. The business unit in such cases seems almost to lose its individuality in the ramifications of a world-wide industry.

¹ Tenth Census, U.S., 1880, vol. ii., "Manufactures."

CHAPTER II

THE PROCESS OF MANUFACTURE

THE Act incorporating the Cutlery Company of Hallowell enjoineth on all persons engaged in the production of cutlery wares the obligation "to make the edge of all steel instruments manufactured by them of steel, and steel only." The practice of welding a steel edge or lining on to an iron blade has long since been abandoned, owing to the greater cheapness and more abundant supply of the finer metal, except in the case of some large and heavy implements, such as heavy scissors and shears; in other articles the blade is fashioned of steel throughout in almost every case. The requisition to employ steel is, however, no less essential to-day than it was in 1624; but a more accurate and exacting, if flexible, interpretation of the term would be required now than was then the case, were the attempt made to set up an official standard of good workmanship. It is, therefore, necessary to remind ourselves of the essential characteristics of the metal which constitutes the prime material of the industry. What is steel? Wherein lies the specific virtue which distinguishes its products from those of inferior substitutes? There are few terms, surely, that refuse to be caught in the trammels of accurate definition with more baffling per-

sistence. We must thus content ourselves with a general description.

Steel is a form of iron containing a certain small proportion of carbon, varying from about 0·1 per cent. to 1·5 per cent. In this respect steel is intermediate in composition between cast iron, which may have a carbon content of from 1·5 per cent. to 4·5 per cent., and wrought iron, from which the carbon has been practically eliminated. Generally speaking, steel is produced by pouring molten iron, which has been carbonized, into a mould, the resultant product being susceptible of hardening and tempering. Even this broad description must be qualified. Mild steels cannot be hardened and tempered: "shear" steels are not produced by melting; and many special steels are alloys containing constituents such as nickel, manganese, tungsten, and other rare ingredients. In other than special steels the proportion of carbon roughly determines the degree of hardness of the finished product. Pure iron is ductile and malleable: the hardest substance known, on the other hand, is the diamond, which consists of pure native carbon. Carbon is thus by far the most important secondary element in the composition of steel, owing to its influence on the hardness of steel and the capacity of the latter for taking a keen edge. Articles which require great tenacity, such as axes, hammers, and shears, may be made from steel with only 0·75 per cent. of carbon. Edge tools and saws need a harder composition, say, from 0·90 to 1·20 per cent. Small files require the hardest steel of all (carbon 1·50), and the instruments for which the keenest edge is demanded, namely, razors, should have a steel with at least 1·25 per cent. of carbon; these latter

articles are, of course, exceedingly brittle in comparison with those made of milder steels, such as pocket-knives.

This wide variation in the attributes required from different cutlery products naturally permits a great latitude in the methods by which the different grades of raw material are produced/ The steels employed fall into three groups—common cast steel, made by the Bessemer and open-hearth processes, shear steel, and crucible cast steel. In each group there are various grades, and the whole form a more or less continuous series of materials, which may be applied to the various products of the industry, according to the purpose for which they are required, and the work they are expected to perform. At one end of the scale come the commonest and roughest goods, in which price rather than quality is the dominant consideration ; for these articles steels made by the open-hearth or Bessemer process are often employed, in which processes the molten iron is converted into steel by the oxidation of the superfluous carbon and the elimination of sulphur, phosphorus, and other deleterious impurities, the resultant product being a forgeable steel of definite temper. From time to time cutlery wares have even been produced from crude molten iron by casting in a mould, but such spurious goods are worthless for ordinary purposes, and are liable to lead to offences under the Trade Marks Regulation Acts if substituted for goods made of sound material. Implements which require great plasticity and toughness, and at the same time demand a hard, keen edge, such as a table-knife or a butcher's blade, necessitate the use of material of peculiar excellence. In this case ;“shear” steel is employed. A razor steel, on the

other hand, which has to take the keenest edge of any cutting instrument, and is consequently hard and brittle, must possess also an absolute uniformity of temper, and be susceptible of a high polish. Such a steel is produced by the crucible melting process. Shear steel and "crucible" or "cast" steel are thus of such high importance in the production of the finest wares that it is worth while to summarize the processes by which they are manufactured.

The material for these finer qualities is derived almost exclusively from imported iron, the best known being obtained from Sweden and converted into steel in Sheffield by the process of "cementation." This Swedish iron is a metal of singular purity which has lost most of its carbon in the operations of puddling and rolling into bars, by which it has been prepared for export. The transition from iron to steel implies, therefore, an increase in the carbon content. This is achieved by placing the long flat iron bars in a special furnace, which consists of a pair of long, oblong troughs or pots of freestone. Each bar is bedded in and surrounded by charcoal, from which it absorbs carbon. The furnace is covered in with "wheel-swarf"—the refuse of the grindstones as they wear away at their work—which fuses and forms an airtight cover. The furnace is so contrived that the whole pot is surrounded by the flames, the heat being transmitted to the contents without direct contact. The bars are thus raised to a red heat, and the fires are maintained for about twelve days. When withdrawn from the furnace the steel is covered with swellings or blisters, which give it the name of "blister" steel. Much of this blister steel is sold to blacksmiths for general use, but its lack of uni-

formity of structure renders it unsuitable for the production of choice articles. Since the carbon penetrates from outside, the blister bars are of uneven composition, harder on the surface than at the core. To remedy this defect, therefore, and to increase the plasticity and toughness of the metal, the bars are subjected to one of two further processes—either to “shearing” or to melting in crucible pots.

To make “shear” steel the blistered bars are broken into short lengths and bound into faggots, which are then heated in a furnace to a welding heat, and forged down to a square bar under a heavy hammer. If the welding and forging is repeated, the product is called “double shear.” This metal is the finest and most costly material for the manufacture of large knives, shears, and scythes, and other articles which require great tenacity and moderate hardness. It is uniform in substance and exceedingly tough and malleable.

Blister steel is further used for the production of crucible or cast steel. The name “cast steel” might be applied to any form of steel which is produced by melting: but the name by priority and long prestige belongs properly only to steel formed by melting blister steel and other ingredients in small clay pots or crucibles, which are manipulated by hand, on the method invented by Benjamin Huntsman in Sheffield in 1740. Steel can be made by this method with a high degree of accuracy, a precise formula being laid down for each pot in accordance with the specification of the customer. The highest grade of steel is made of fragments of blister bars and scrap steel, to which small quantities of manganese and other materials are added; sometimes wrought iron is employed and

charcoal added to supply the necessary carbon ; sometimes wrought iron and blister bars are melted in conjunction. Whatever the mixture, the materials are carefully weighed and placed in the pot, which is then lowered into a small furnace chamber below the foundry floor and melted at intense heat in a few hours. The next operation—that of extracting the crucible from the fire, and pouring its molten contents into an iron mould to form an ingot, is spectacular in the highest degree. The “teemer,” with amazing strength and skill, seizes the pot with his tongs, and while the wet sacking in which his legs are swathed smokes and ignites in the fiery glow, he pours the dazzling liquid with absolute accuracy into the narrow aperture of the mould. The unaided eye can with difficulty endure the brilliance of this spectacle :

“’Tis blinding white, ’tis blasting bright ;
The high sun shines not so.”

The contents of the pot are from thirty to sixty pounds in weight, and since the empty crucible weighs some twenty-five pounds, and the tongs about twenty pounds, the total weight which the melter must manipulate during this operation often approximates to a hundredweight. The ingots are subsequently forged down to rough bars, and afterwards are rolled into rods of such sizes and sections as are most appropriate for their utilization for the production of scissors, penknives, razors, edge tools, and other implements of the very finest quality.

It is necessary to add to the foregoing summary that the production of open-hearth steel can now be controlled with a high degree of accuracy over a wide

range of products, and is thus capable of supplying material so uniform and reliable that it is able to compete with the more costly crucible steel, except in the production of articles of the very highest grade.

We have said that one of the characteristics of steel is that it is capable of being hardened and tempered. Hardening is effected by raising the metal to a clear red heat, and then quenching it by plunging it into water or oil, the latter being used when a less intense effect is desired. Usually the metal when thus hardened is too hard and brittle to fulfil its purpose, and the further process of tempering is employed to obtain the most suitable combination of hardness and plasticity. The latter operation consists in slightly reheating the implement and allowing it to cool gradually. The range of temperature required to produce the practicable varieties of hardness or temper is a narrow one, and as the temperature is judged by eye, it demands great delicacy of judgment. As the temperature slowly rises, the surface of the metal loses its dull grey tint, and passes through different shades of colour—yellow, straw, brown, purple, dark blue, and light blue in succession. The furthest point in this scale is, of course, far below the temperature at which the metal was hardened. When the desired tint is reached, the metal is slowly cooled. If great hardness is required, as in a razor, the process will be checked at a pale straw colour; a pen-knife will be carried a stage further; scissors require still greater toughness, and will be tempered purple; a strong pocket-knife will be rendered dark blue; lastly, a carving-knife, which requires great elasticity, must be reduced to the light blue stage.

We may now pass to a description of the procedure

involved in the production of typical cutlery and other wares. With the exception of fraudulent articles produced by casting in a mould, all cutlery implements involve the operations of forging, stamping or pressing, hardening and tempering, grinding, and hafting or putting together. The three main divisions are thus forge work, grinder's work, and cutler's work. It will be well to consider each department in turn, and at the same time to point out the chief technical improvements of recent times which in many cases promise to revolutionize the methods of production.

CUTLERY.

The traditional method of forging cutlery is a purely manual process, the forger requiring for his work a hearth of fine coke, forced into intermittent activity by means of hand bellows, an anvil or stithy, a trough of water, and also hammers, tongs, and other tools; these he operates throughout by hand. In the forging of light articles, such as razors, pen and pocket blades, small scissors and the like, the forger works in solitary fashion; but for making table blades, files, tools, and larger instruments, two men are usually required, the maker being assisted by a striker or "butty," who manipulates a heavy double-handed hammer. Steam-hammers, fly-presses, and other mechanical substitutes for hand forging have, however, been steadily encroaching on the more ancient method during the last thirty years, and only for the production of the finest grade of goods is hand forging likely to survive the present generation.

The forging of a pocket-knife blade will illustrate

the essential features of the hand process. The end of a steel rod is raised to a glowing red heat in the hearth: the forger then draws out and moulds the glowing metal into the formation of a rough blade, which at this stage is called a "mood"; the mood is now severed from the rod, and at a second heat the part which forms the shoulder or joint is fashioned; a third heat allows the whole to be well smithed over, the nail mark to be struck, and the shape carefully corrected. Finally, the maker's name and trade-mark are impressed on the blade, which is now ready for hardening and tempering. The other metal portions of a pocket-knife, such as the spring and the metal linings or scales, were formerly also hand forged, but are now "fled" out in a press.

In a hand-forged table-knife the blade is forged from steel, but for the "tang" which runs up into the handle iron is used, the junction of the two metals being close in front of the shoulder or "bolster."¹ The blade is first roughly forged and cut off: the end is then laid on a rod of iron, both having been raised to a welding heat, and the two are forged into complete union, and cut off from the rod at a suitable length. From the iron portion the bolster is moulded, the heated metal being placed between the halves of a die—or "prints," as they are called—on which the striker deals some heavy blows. The blade is next finished, the tang is drawn out, and the blade is ready to be tempered. The machine-forged blade, on the other hand, is made of the same metal throughout. It is formed

¹ This weld in a hand-forged table-knife has the appearance of a faint thumb-mark, and is usually visible on the reverse side of the knife near the bolster.

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under a rapid running hammer, being quickly drawn out from the heated rod. Its shape is then accurately corrected in a press, which shears off all superfluous metal, and the bolster is formed under a heavy stamp. The use of this trip hammer for forging table blades is an American innovation; the application of the same device for striking up the bolster instead of moulding it by hand has increased the output of two men (formerly smith and striker, now hammerman and helper) no less than twenty-fold.¹

Steel forks are of minor importance to-day, owing to the substitution of electro-plated and other soft metal varieties. An important exception, however, is found in the carving-fork, which represents a more or less distinct branch of manufacture. It is forged in the following manner: after the shank and tang have been roughly formed from the square rod, the portion intended for the prongs is hammered flat. The shank is next given its proper shape by means of a die, into which it is introduced while hot. The prongs are then moulded by placing the flat end, raised to a red heat, under a heavy mechanical stamp, which leaves only a thin tissue of steel between the prongs to be cut out by means of a fly-press. The forks are now ready for the annealing, which process is necessary before they can be ground, filed, and bent to a correct shape. Finally they are again hardened and tempered.

A razor blade is usually hand forged in a manner similar to that already described, but quantities of razor blanks are now moulded in a die under a heavy stamp or hydraulic press, the gradual perfecting of

¹ J. M. Swank, "Growth of British Iron Industry."

which process will doubtless lead to the supersession of the hand-made article. The peculiar difficulties in such fabrication arise from the use of a highly carbonated steel, and from the disproportionate variation of thickness between the back and the edge, for which reason the forging process constitutes a very severe test of the plasticity of the metal. Under these conditions it also arises that the operations of hardening and tempering are of peculiar difficulty and delicacy, owing to the risk of uneven action both when the blade is chilled by quenching and during the subsequent tempering.

The forging of fine scissors by hand is of special interest owing to the exacting operation by which the handle or bow is formed; this consists in punching a hole through the flattened rod large enough to admit the point of a little beaked anvil which stands upon the stithy. By this means the hole is enlarged and the bow is fashioned; but the tenuity of the steel and the extreme plasticity required make it difficult to attain the desired result without fracture at some point. When forged, the blades, instead of being hardened, are annealed and sent to the filer, who gives the shanks and bows a more perfect shape, squares the joint, and bores the rivet-hole. This hole is of peculiar formation. The rivet which fastens the blades together, instead of being of uniform thickness, is graduated so that the head which holds the upper blade is larger than the portion on which the two blades work, and this again is larger than the screw which enters the lower blade and secures it to the upper one. Thus while each blade is firm on the rivet, it has sufficient play to work evenly and smoothly. Large scissors

are usually manufactured with rim shank and bows, and still heavier varieties with only a slip of steel welded along the blade to give a cutting edge. Some scissors are cast from common steel, but these are worthless in comparison with the forged article. The greatest change that is taking place is the introduction of die-forging under a heavy mechanical stamp in substitution for hand-forging. The rim of superfluous metal left by this process is subsequently sheared off in a fly-press; the article thus acquires its perfect contour, and when hardened and tempered is ready for the grinder. As the result of the rapid progress made by this specialized trade of stamping the scissor-forger's occupation has already greatly declined, and its doom appears irrevocable. German mechanical practice has in this branch been ahead of the English, and large quantities of scissor blanks have been imported to Sheffield in recent years.¹ / The English makers, however, have now largely adopted the newer methods, and the machine-made blades are rapidly displacing the hand-forged variety.

/ The second main stage in the fabrication of a cutting implement is the process of grinding. This work is performed in a separate department in the case of large factories, and very commonly in independent establishments. A grinding mill in Sheffield is known as a "wheel," and the rooms into which it is divided are called "hulls." In former times these mills were scattered along the banks of streams from which the necessary power could be obtained, and the workers were thus enabled to dispense with the still

¹ Committee on the Truck Acts, Cd. 4444. Questions 12478, 12503-5.

more primitive methods of rotating their stones, such as hand or horse power.

Hand power was formerly used in many cutlery centres, and was no doubt the ordinary method in the London industry. This is shown, for example, by the list of the tools and appliances of a London cutler in 1851, as described by Le Play. They consisted of a hand wheel with crank, fly-wheel and pulley band, glazers and other polishing wheels, a bench with vice and tool rack, a low drill, and an assortment of files and other hand tools. For a pictorial representation of grinding by hand in London a generation earlier, reference may be made to a woodcut showing a knife-grinder at work at his stone, while a boy supplies the power by revolving a large fly-wheel.¹ Thus we see that water power was not an essential factor in the localization of the industry in the early times, a conclusion which is supported by the fact that many continental centres still rely upon hand power. A precisely similar story is recorded in other small trades; in the manufacture of pottery in Staffordshire, for instance, the potter's wheel was commonly revolved by means of a "jigger" turned by a boy.²

The advent of steam power, though it brought about the concentration of the grinding occupation, made no difference to its form or manner of execution. To-day, however, the practicability of mechanical methods of grinding is established; the adaptation of machines to such different operations as razor grinding and file grinding is prophetic of the future course of industrial development.

The internal arrangement of a hull in which hand-

¹ "The Book of English Trades," London, 1824.

² Children's Employment Commission, 1863, 1st Report, pp. 3, 8.

grinding is carried on demands particular statement. From the front of the building—the only side which admits light—independent ranges of grinding apparatus recede to the back wall, along which the power shaft with its revolving drums is arranged. Each set of apparatus is thus at right angles to the shafting, from which it is driven by means of leather belts or “bands.” The position nearest the light is usually occupied by a large sandstone wheel for the coarse preliminary grinding; behind this are placed one or more smoothing, polishing, or special stones or other wheels. The accommodation for a set of this kind, usually comprising space for three wheels one behind the other, and described as “three deep,” constitutes a separate “trough,” or “trow” (pronounced *tro*). Each grinder must then be provided with such a trough, and must see that it is fully equipped with the requisite appliances. In heavy grinding he sits astride of the sandstone on a massive wooden saddle or “horsing,” which is strongly anchored by chains to the floor. The horsing is raised level with the top of the stone, and partially covers it, allowing the grinder to apply the tool he is grinding to the face of the stone somewhat in advance of the highest point. The grinder always sits facing the light, and the grindstone rotates so that the top of the stone revolves away from him. This applies to all the main branches of grinding work, with the rather curious exception of scythe grinding, in which trade the stone is made to revolve in the opposite direction, and the operator hangs further over his stone. The latter, it may be noted, is the direction of rotation commonly adopted in Germany and other countries for all descriptions of grinding work.

The grinder is exposed to a peculiar peril owing to the liability of a faulty stone to burst, in which event even the solid fastenings of the horsing may prove inadequate to prevent his being flung bodily from his seat and seriously injured, while the danger to any person who happens to be in front of the stone at the moment is even greater. A second and more insidious source of evil springs from the dusty and dirty character of the occupation and the consequent liability to phthisis among the workers.¹ Heavy grinding is usually performed on a wet stone, the stone being sometimes run in actual contact with the water in the trough below, sometimes being kept sufficiently moist by the frequent dipping of the article to be ground in a vessel at the grinder's side. In such work particles of wet sand or metal are constantly thrown off by the stone, and the moisture that is similarly dispersed is liable also to carry the germs of infection from one worker to another. In the process of dry grinding the danger is even more palpable, being manifested by the stream of sparks which is given off at the point of contact between the article to be ground and the stone or wheel. For some purposes wet grinding has superseded the use of the dry stone where the latter was originally employed. This is the case, for example, with pen and pocket blades, which were ground on a dry stone until about 1840. It is, however, impossible to abandon dry grinding for certain articles and processes. For this reason it is now made compulsory to install a special duct for carrying off the dust by means of air suction, the orifice being close to the point of operation.

A few typical examples of the grinder's work may

¹ See below, Ch. ix.

TABLE-BLADE GRINDING.

now be considered. There is, of course, considerable variation in the number and the nature of the requisite operations according to the particular trade and the class of goods treated. A high-grade table-knife must go through six different stages, which will usually be arranged in two troughs, each of them "three deep." The blade as it comes from the forger must first have the neck or bolster ground on a special hard dry stone, adapted to produce the desired grooves or hollows. This is followed by the first rough grinding of the blade on a large wet stone. This stone when new usually measures about four feet in diameter and nine inches across the face, a large stone being desirable to facilitate the production of the slight convexity which is usually given to the blade—"rolled" is the grinder's term. Before passing to the next process the grinder corrects any deviation from flatness in the blade by tapping it with a hammer. The blades are then further smoothed and corrected in shape by means of a fine, hard dry stone, called a whitening stone, which does its work with great accuracy. The blades next pass through the process of "glazing," by which they acquire the first smooth polish. The "glazer" used for this purpose is a wooden disk between three and four feet in diameter and about two inches thick; it is rimmed with thick leather dressed with emery and grease, and is worked at a high speed. The following operation is similar, and consists of the glazing of the bolster on a special wheel. Finally comes the process of "buffing," which gives the final high polish; the buff is a wooden wheel covered with thick, soft leather on the periphery, and is dressed with flour emery or with rouge polishing powder.

The operations involved in other branches of grind-

ing are similar to the above, with variations peculiar to each article. For polishing razors, penknives, and scissors a "lap" is used, which is a wooden wheel rimmed with a lead alloy and dressed with flour emery. Penknife and scissor blades are ground practically flat instead of "rolled," and the work is often done on the discarded stones of the table-knife-grinder, which are useless to the latter when they are worn down to a diameter of two feet or less. The grinding of razors is work of the most delicate and skilled description and requires very expert manipulation. Being finished "hollow," or concave, a razor must be ground on the smallest possible stones. Stones as small as four inches in diameter have been employed for the past hundred years, and to-day many full-hollow razors require stones as small as one or two inches diameter only. These small stones are usually made of compressed emery or similar composition. The razor-grinder first, on a dry stone, roughly shapes the coarse blade which comes to him from the forger. After this it is file-cut and marked, hardened, and tempered; next it is ground to an edge; then comes the hollow grinding, which is first performed horizontally along the blade by means of a ribbed stone and then again from back to edge. This last is an exceedingly precarious operation on account of the extreme thinness of the blade for half its width, and because of the risk of spoiling the temper of the blade by allowing it to become heated. Usually this final grinding is performed on a series of stones diminishing in size from six inches downwards. The blade when ground is glazed and buffed on small leather-covered wheels dressed with polishing material.

The surface velocity of the stones, glazers, laps, and

RAZOR GRINDING.

buffs varies considerably, even when employed for an identical purpose. In file grinding, for example, where the stones vary from 4 feet to 5 feet in diameter, the surface velocity of the stone ranges between 2,500 and 4,500 feet per minute. A table-blade grinder's stone, 4 feet to 4 feet 6 inches in diameter, usually runs about 4,000 feet per minute, as is the case with the large 6-foot stones used for saw grinding. The average speed for large stones is about 3,700 feet per minute. For smaller work much higher speeds are usual. For a stone 2 feet 6 inches in diameter 30 revolutions per minute is a common speed, and gives a surface velocity of 11,700 feet per minute. In the processes subsequent to the use of the grindstone, the speed of the wheels is greatly reduced. Thus it may be noted that while a glazer is often run so as to give a surface velocity of 1,500 feet per second, a buff does not usually exceed about 70 or 80 feet per second, for fear of engendering too great a heat and so spoiling the temper of the blade.¹

The third main stage of cutlery manufacture is the work of building up and handling the blade, and so completing the construction of the finished article, table-knife, pocket-knife, razor, and so on. It is to those engaged in this department of the work that the term "cutler" is specifically appropriated, and more especially to workers on knives, as pocket- or table-knife cutlers. The word may, however, be used to include, in addition to these, the occupation of the razor "hafter," and even that of the scissor "work-board hand."

In addition to the blades which we have followed

¹ Report of Chief Factory Inspector, 1904, Cd. 2569, 2848. Also Dangerous Trades Committee, 3rd Rep., 1898, Cd. 9073.

through the processes of forging and grinding, the cutler requires for his work hafting materials, oil, and wire, and also metal linings or springs where such are employed. His tools will include drills for boring—an operation which is even now commonly performed by hand by the agency of a primitive boring-stick or bow and a piercer—as well as files, vices, glazers, and buffs. In addition to these the spring-knife cutter requires a hearth for hardening and tempering his springs. The metal scales or linings, as well as the springs, the forging of which was formerly comprised in the cutler's task, are now stamped out by machinery and reach him ready formed. The covering material, for which a great variety of substances are employed, from gold and silver down to bone and wood, are also prepared by subsidiary trades. Until recently the work of preparing such materials as horn, ivory, and pearl was performed by the special class of handle- and scale-cutters—who reduced the material to convenient sizes by means of circular saws—and by the pressers, who, after boiling and softening the material, moulded it in dies by the help of powerful hand vices. This work is now rapidly decaying under the competition of factory-made substitutes. Imitation horn, ivory, stag, pearl, and tortoiseshell hafts and scales, made of zylonite, celluloid, and other substances, have now to a large extent displaced the products of the older trades.

/ The cutler's task consists in the assemblage and adjustment of the various portions of a knife. The simplest case is that of a table-knife or razor. In common table-knives the tang consists of a flat piece of iron, on to which the cutler rivets scales of horn or wood to make a solid and serviceable handle,

which is then finished by glazing and buffing. Knives with solid metal handles offer even less work to the cutler. In finer goods the pointed tang is passed longitudinally through a solid haft, and is riveted at the top, or by a transverse pin from one side. Most commonly the tang is simply fitted into the hole bored in the haft to receive it, and cemented by means of resin and ashes.

The building up of a pocket-knife is a task of greater complexity, and one for which it is not easy to substitute mechanical processes, owing to the infinite variety in which these goods must be produced in order to meet the whim of the purchaser: a single firm may supply such knives in thousands of different patterns. The result of this building-up by hand is that every pocket-knife is an individual product in which every part has been specially adjusted by hand to that particular implement. \ First comes the work of preparation, in which the blade and spring are filed to the required dimensions, while held in a vice against a gauge-plate of hardened steel, and then bored in the appropriate places. The covering material must next be shaped and fastened to the inner scales or linings. In common knives these latter are made of iron; for medium quality goods brass is employed; while for the most expensive sorts German silver is preferred. The haft is then built up, the springs inserted, and the whole riveted together after being first loosely pinned in order to correct the adjustment and working. The blade is then finally inserted and riveted home, the hinge being adjusted by means of a file, so as to make it "walk and talk" properly. The whole is then smoothed over with a file and finally glazed and buffed.

It may not be out of place to distinguish here between the terms penknife and pocket-knife. These are sometimes regarded as synonymous, but the difference between them, though less fundamental than formerly, is still important. A penknife originally indicated an implement to be used for cutting quills into the correct form for use as pens, and required, therefore, an exceedingly hard blade with a fine keen edge, too brittle to stand rough usage. A pocket-knife, on the other hand, was a heavier instrument for miscellaneous purposes and for rough use, with a blade of tougher material. Nowadays, a pen and a pocket blade are both fitted in one knife. Where they are kept separate, a penknife usually has the blades inserted at opposite ends, a pocket-knife at the same end of the handle.

The steps in the production of a pair of fine cast steel scissors subsequent to the actual forging deserve separate statement. Before being hardened the rough blanks are sent to the grinder, who shapes the blades on the stone. This operation demands special care and dexterity in order to produce the peculiar flexure of the surface which is the essential characteristic of a scissor blade. Any one who will take the blades of a pair of scissors apart and examine their construction will see that each blade is slightly concave on its inner surface, being ground hollow from back to edge; furthermore, each blade is concave from rivet to point; lastly, the blades have a slight twist towards one another which causes the two edges to engage throughout their entire length. After the grinding the bows are smooth filed and burnished by women. The scissors are then fitted together by the workboard hands, and are wound

from the points upward with iron wire; the rivet is removed, and the blades are then hardened in the usual manner. They are now ready for the final grinding, and since they have been turned black by hardening, the bows and shanks must again be ground, glazed, and polished where required, and the bows burnished with polished steel implements to give them the requisite finish.

Allied to the articles of domestic cutlery to which we have hitherto confined our review are other industrial implements, which, if they display less delicacy of fabrication and refinement of superficial finish, demand no less a high standard of excellence in their material, and careful skill in their execution. In many respects there is a close affinity between household cutlery and such tools as scythes and sickles, files, saws, and edge tools. This will be evident from a brief description of the chief methods of manufacture.

SCYTHES AND SICKLES.

The scythe and the sickle are implements whose importance has relatively diminished, but for which there still exists a demand of sufficient magnitude to make their manufacture a substantial industry. The traditional method of making a scythe is by the welding of shear or blister steel on to an iron rod lengthwise, so that the steel may be forged out to form the blade, while the thick iron back is hammered over so as to make a strong band which gives to the blade a proper rigidity. The projection of the iron rod at the heel of the blade forms the tang, by which it is fastened to the handle. The blade is next smithed over, hardened, and tempered. It is then carried

to the grinding-wheel and ground on a large grit stone with a broad and slightly convex surface, which facilitates the production of the concave sweep of the edge of the blade. The grinder hangs over the stone, which revolves towards him, and throws his weight on the blade, which is held under a strip of wood with the edge towards him. The blade, after being glazed, is "set" or straightened by striking it with a hammer on an anvil, and after being varnished and oiled is ready for the market.

An improved form of scythe is manufactured from a thin sheet of cast steel, cut with shears to the proper shape, and riveted to an iron rib along the back. This forms a keener implement, and retains its edge better than the older description, but is not so effective for coarse work, which requires great weight and rigidity.

A sickle is usually formed by welding and forging in a manner similar to the above process. When bent to the appropriate shape, carefully smithed over, and roughly ground, it is toothed by means of a small chisel and hammer, hardened and tempered, and freshly ground, which operation perfects the keenness as well as the shape of the teeth. Lastly, the blade is glazed and hafted.

FILES.

Files were formerly produced by operations of a purely manual character, the operation of forging the larger flat files, as well as three-square and half-round files, being exceedingly laborious. File blanks are now rolled by machinery approximately to the required shape, and the forger's work in reducing them to the finished dimensions is usually facilitated

by the use of a steam hammer. When forged, the files must be softened by annealing, in order to enable the teeth to be cut by means of a steel chisel. Where grinding wheels are not available the file blank is next stripped with a hard chisel ; the simpler method, however, is to obtain a smooth, clear surface by the use of a grindstone. This operation is now performed to a considerable extent by machine grinding, the files being run in and out under a large stone on a moving shelf, which brings them into even contact with the stone as it revolves.

The cutting of the file may also be executed either by hand or by machine. The hand cutting is likely to survive for small work and miscellaneous orders ; but while the older process still claims to produce a superior article, it cannot be maintained that the method possesses any important advantages, whether technological or commercial. The operation of hand cutting is performed by means of a hammer and a small chisel of special quality. For cutting large files the hammer employed often weighs as much as from seven to eight or even nine pounds, but varies according to the class of work in hand from this weight down to a few ounces. The worker sits with his knees at either side of his "stock," which consists of a stone block or pillar, into the top of which a small steel block, called a "stiddy," is inserted, projecting slightly above the surface of the stone. The file is laid on the stiddy, but in order to minimize the recoil from the blow of the hammer, a block of lead or tin alloy is inserted between the file and the stiddy. In this lead the file becomes embedded without injury to the cut surface when the file is cut on the reverse side. The file is held in place by a stirrup or strap, which

passes from the foot over the end of the file. By a succession of smart blows parallel ridges of astonishing uniformity and exactness are produced, the blows following one another with wonderful rapidity.

For working on iron or other hard substances the file is usually "cross-cut," a second series of diagonal ridges being raised across the first; by this means, instead of a series of continuous edges the file acquires a maze of keen separate teeth. For working on a soft substance such as a horse's hoof, on the other hand, a rasp is preferred—that is, a tool covered with individual teeth, produced by driving a pointed spike into the face of the file at uniform distances. Such an instrument is less likely to become clogged in use than one cut in the former manner. The operations performed by a file-cutting machine are, *mutatis mutandis*, of a precisely similar character.

Files are classified, according to the depth of the cut, into seven classes, known as *double dead smooth*, *dead smooth*, *smooth*, *second cut*, *bastard*, *rough*, and *middle cut*. This classification does not include the various forms of rasp. A medium file may have about 1,000 cuts on each side and 300 on each edge, and a worker can cut about twenty such files a day, using a 7-lb. hammer for the face and a 3-lb. hammer for the side. The rapidity of the work varies considerably, but 100 strokes a minute is common in the larger work, while a skilled operator on light work can attain a speed of 250 cuts per minute—an example of amazing manual dexterity and accuracy.

When cut, the files are ready to be hardened; but in order to protect the toothed surface from oxidation in the fire they are thickly coated with a protective composition of a saline character; they are then raised

to a dull red heat in a clear coke fire and plunged perpendicularly into a bath of water. Owing to the contraction not being uniform, the file is apt to become somewhat bent or twisted in this process, but such defects can be remedied by bending the file by main force across a fulcrum before it is thoroughly chilled. A half-round file, which is specially liable to bend, in consequence of the more rapid contraction of the convex side, is usually bent in the opposite direction before being quenched; even so it usually requires considerable correction. A file in this hard but semi-chilled condition is thus remarkably plastic by comparison with its brittle character when cold. To prevent the snapping of the tang, that portion is generally tempered by immersing it in a bath of molten lead. After hardening, the files are thoroughly scoured and washed to clean the cut surface and remove every vestige of salt, and are then brushed over with oil to preserve them.

SAWS.

The process of saw-making is a long way removed from the manufacture of cutlery proper: there are, nevertheless, some features in the production of a saw which are worth remarking for the sake of comparison with the processes already examined. Like the file, the saw is an implement whose use has descended without fundamental modification from remote antiquity, and the fabrication of which represents the results of many centuries of experience. The principal qualities demanded of a metal for saw-making are capacity for hardening, rigidity, and great elasticity. Good saws are cut to the required shape from a sheet

of rolled shear or cast steel ; the edges are then trued, and the teeth are formed by a mechanical cutter working through a die, after which they are sharpened by hand with a file. Next follows the operation of hardening and tempering ; this is accomplished by lowering the heated plates into a composite bath of oil, whereby they become exceedingly hard and brittle, and then passing them over a clear fire until the grease which adheres from the hardening bath inflames and burns away ; this is a convenient indication of the heat required to give the blade its proper temper. To correct any warping that may have resulted, the web is hammered on an anvil as it cools, and is then again planished or smithed in a cold state to make it perfectly true and of uniform elasticity, this being a delicate operation demanding great experience, skill, and dexterity, and somewhat analogous to the tuning of a musical instrument. The saw is now ready for grinding. This branch of the grinding trades is perhaps more arduous and exacting than any other, owing to the size of the articles to be treated, the great height of the grindstones employed, and the intense muscular exertion involved, as the grinder with the help of a flat board presses the flexible web against the stone. Mechanical devices for saw grinding are now relieving the operator from this strenuous toil, the web being introduced between two revolving stones which operate simultaneously. After the grinding the tendency to warp must again be corrected by smithing, and the full elasticity must be restored by slightly reheating the saw, which is then ready for the glazing and finishing of the surface. There remains the setting of the teeth, which is accomplished by placing the cutting edge on the

rounded side of a small anvil and striking each alternate tooth with a hammer, so as to bend it down a little : the saw is then reversed, and the remaining teeth bent in the contrary direction. This operation, when the teeth are small, requires great accuracy of eye and hand for its successful performance.

CHAPTER III

THE RAW MATERIAL

THE widespread distribution of the cutlery industry which preceded its concentration in the better-known centres of manufacture points to the utilization of materials locally produced. It is thus related broadly to the diffusion of the iron-making industry itself, and it is worth while to recall the salient facts in the development of that industry in order to understand how the cutler's material was obtained. The use of the blast furnace for smelting ores—now the fundamental process of iron manufacture—was not known in this country earlier than the fifteenth century, when it was introduced from the Continent. Prior to that time iron was made not by casting, but by the direct working up of a small quantity of ore into a bloom of wrought iron by alternate heating and hammering.

The primitive furnace or bloomery hearth was of the simplest construction, and the blast was furnished by bellows worked by foot power. It may be supposed that much of the natural impurity of the ore was gradually eliminated in the repeated forgings, and that the employment of charcoal as fuel resulted in the absorption by the product of sufficient carbon to give it a character akin to steel: that is to say, though the

material was really wrought iron rather than steel, yet the percentage of carbon absorbed during manufacture was sufficient—especially at the thin edge of the implement—to make the metal capable of being hardened. This method of production remained in use for many centuries, and yielded a material sufficiently adaptable for all the essential purposes of the cutler's craft.

Such was the material employed for the manufacture of the commoner sorts of cutlery products. For the finer tools, however, foreign steel was employed from early times. In some cases the entire implement was fabricated from the imported metal; more often a strip of steel was welded on to a back of native iron so as to give a serviceable edge with due economy of material. This imported steel was obtainable at all the chief fairs and markets, and by these channels reached the village craftsmen everywhere—though, naturally, prices were in general higher inland than near the seaports. Steel was sold in small bars, each about four pounds in weight, called "gads." These bars were bound into faggots containing about thirty pieces each, and known as "garbs."¹

The use of water power for driving the blast of the furnace and for working the heavy tilt-hammers² was

¹ "A Garb of steel contains 30 pieces" ("Assisa de Ponderibus et Mensuris").

² Camden gives a good description of the water-driven forge hammers of Sussex at the end of the sixteenth century. Yarranton, writing in 1677, describes the production of iron at that time from the clinker heaps and waste left by the furnaces of the Romans; the latter, he says, used only a foot blast: "but now, by the force of a great wheel that drives a pair of Bellows twenty feet long, all the iron is extracted out of the cinders which could not be forced from it by the Romans' foot blast." (England's Improvement," p. 59.)

well established in the fifteenth century, and would naturally encourage the concentration of the industry in places where water power was plentiful. But even when the fullest advantage was taken of these devices the scale on which the industry could be operated continued relatively small. The great revolution in method which marks the transition to modern industry was, of course, due to Dud Dudley's demonstration, in 1619, of the possibility of using coal instead of charcoal as fuel for smelting. This invention, however, was not fully utilized until more than a hundred years later, when Abraham Darley began manufacturing iron with "pit-coal" at his furnaces in Coalbrookdale.¹ In 1788 one-third of the iron furnaces in Great Britain still employed charcoal as fuel. Indeed, the effective substitution of coal for charcoal was not brought about by its recognition ~~as~~ as a technological advance, but was caused by the depletion of the forests and consequent increasing scarcity of the older fuel in comparison with the rapidly growing demand for its use in the later stages of manufacture.

The Hallamshire cutler in the early days of the industry must have found an ample supply of the essential materials of his craft within easy reach of the locality. The iron ore of the district was not only abundant, but also readily accessible; it consisted of a clay ironstone which, though containing too much phosphorus to yield a reliable steel of high temper, was yet well adapted to the production of wrought iron of good quality. That iron-making was practised in the neighbourhood from early times

¹ About 1735.

there is abundant evidence to demonstrate. The monastery of Kirkstead obtained a charter from the Lord of the Manor of Kimberworth in 1161, which gave them the right not only to dig ore, but also to operate two furnaces and two forges for the manufacture of iron. That these rights were still effective at a much later date is shown by a grant from the Abbot of Kirkstead in 1524, giving leave to dig ironstone in the parish of Ecclesfield.¹ Another twelfth-century charter contains a grant by Walter de Abbeytoft of a parcel of land at Birley in Brampton for the establishment of an iron bloomery and smithy.² In the High Peak forest there were iron forges at work in the middle of the thirteenth century, and at the opening of the fourteenth century the monastery of Beauchief was operating iron mines in Greenhill and Norton, and doubtless owned the necessary bloomery hearths and forges for manufacturing the ore into bars.³ In 1463 we find such "smythees" mentioned in a lease granted by the Abbot of Beauchief.⁴ A century later we learn, from the records of a lawsuit regarding the diversion of the waters of the river Dearne, that there were some ancient ironworks in the parish of Royston in 1589, described as "a pair of smithies or Iron Mills," driven by "ould smithie wheels."⁵ A reference in 1575 to four mills in Sheffield Manor itself, which were no doubt iron-mills, brings us back to the centre of the cutlery district. These mills are alluded to as "Sheffield Mylne, Pound Mylne, Whyston Mylne, and Attercliffe

¹ "Effingham MSS." Hist. MSS. Commission, 3rd Report.

² "Victoria County History of Derbyshire," vol. ii.

³ *Ib.* ⁴ Jeayes, "Derbyshire Charters."

⁵ Exch. K.R. Special Commission, York, 31 Eliz., No. 2709.

Mylne.”¹ Camden adds his testimony to the activity of the local industry, speaking of “much iron digged up in these parts,” and describes Sheffield as a town “famous, like many others in the neighbourhood, for its ironworks.” He also cites Leland’s testimony as to the abundance of fuel: “Halamshire hath plenty of woodde, and yet there is burned much se cole.”² Harrison, again, in his survey of the Manor of Sheffield in 1637, describes the Earl’s Park as well stored with coal, and as containing abundance of ironstone; he continues: “There may be within this Mannor raised an iron worke, which would afford unto the Lord (as is thought) a thousand pounds yearly, and all charges discharged; and for the maintaineing of this worke there are within this Mannor two thousand acres of Wood and Timber (besides Sheffield Parke), whereof there are above sixteen hundred acres of spring woods, besides great store of old trees fit for noe other purpose but for the makeing of Charkehole.” It must not be inferred from the conditional character of this statement that iron was not at this time actually won from the manorial demesne. We may cite the evidence of Bacon, who speaks of the Earl of Shrewsbury as “a great grazier, a great sheepmaster, a great collier, a great cornmaster, a great lead man, and so of iron and a number of the like points of husbandry.”³ Moreover, we have the evidence of the commonplace book of the Earl’s steward for 1574–5, from which we may glean some interesting details as to the equipment and operation of the manorial ironworks.”⁴ The

¹ Dekenson’s Memorandum Book, MS.

² Gough’s Camden, iii. 235, 262.

³ Essay on “Riches.”

⁴ See Appendix II.

development of the iron manufacture near Sheffield had, in fact, caused the clearing of what had been a very extensive forest region. Not only was the area around Hallamshire denuded, but the vicinity of the township of Sheffield, which had boasted of exceptionally fine oak timber, was itself, as Evelyn tells us, stripped of its glories.¹ Such, of course, had also been the fate of all the chief iron-making districts ; we may recall, for example, how Dud Dudley found that "within ten miles of Dudley Castle there be near 20,000 smiths of all sorts, and many ironworks at that time² within that circle decayed for want of wood (though formerly a mighty woodland country)." After the establishment of the Cutlers' Company the activity of the iron industry was undiminished, as is shown by the fact that even in the troublous times of the Civil War the Sheffield foundries were utilized by the Royalist troops who had seized the Castle for the purpose of casting cannon and other warlike implements.³

Ample as was the supply of local iron, it is clear that the finer imported varieties were made use of from the time when the cutlery industry emerges from obscurity. Small supplies would be likely to reach Sheffield from early times from the great fairs and markets, which were attended by Spanish and other dealers. The countries from which such imports were brought were those most famous for the purity of their irons—Russia, Styria, Sweden, and Spain. A general statute of 1549 forbids the use of "Bilbow" iron for making gads of steel, and states that the edge tools and weapons made therefrom are of "little or no

¹ Evelyn's "Sylva."

² 1619.

³ Gatty, "Sheffield Past and Present," 85.

goodness.”¹ This Bilbao or Spanish iron has, however, retained its reputation, and “Bilbow ore” is still spoken of in Sheffield.

That these foreign irons were known in Sheffield in the sixteenth century is shown by the record of payments by the Church Burgesses for Danish (that is, probably, Swedish) and Spanish iron in 1557.² The iron trade of Sweden, we may note, made rapid strides after this time in consequence of the stimulus afforded by the settlement of Protestant refugee iron-workers from Flanders.³

On October 8, 1874, we hear of the arrival in Sheffield, by way of Bawtry, of the considerable consignment of six barrels of foreign steel, received by the Earl's steward for the use of the manorial workers, and lodged in the store-house at Sheffield Castle. This consignment seems to have contained 5,400 bars or “gads,” being reckoned as follows: nine score gads equals one burden; fifty burden equals one barrel.⁴ Sixty years later we find the London Cutlers complaining of the worthless character of the steel made under Dudley's patent, and requesting permission to use foreign steel “as before,” which illustrates the reliance that was placed upon the supply of imported material.⁵ In 1640 we hear of the arrival in Sheffield of twelve gads of “Cullen steel,”⁶ which doubtless refers to the so-called “natural” steel of Westphalia, imported from Cologne.

These foreign importations would appear to have largely increased during the seventeenth century, and

¹ Rastell's “Statutes.”

² *Sheffield Local Register*.

³ Anderson, “Hist. Commerce” (1764), i. 427.

⁴ See Appendix II.

⁵ S.P.D. Jas. I, cv. 134.

⁶ Leader, “History of the Cutlers' Company,” i. 43.

to have jeopardized the progress of the native iron industry, though naturally enough their superiority was not allowed to pass unchallenged. In 1661 the Grand Jury at Lewes registered their condemnation of the large quantities of Swedish iron then being imported, on the ground that the material was "not so useful" as the native product.¹ On the other hand, the iron importers and users in London bitterly opposed the agitation of the English ironmasters for an increase in the duties on Swedish iron in 1668, though the petition of the latter was acceded to by the Committee for Trade.² Similarly the Sheffield cutlers had put in a plea a few years earlier "that transporting of Spanish iron may be continued,"³ their experience being in accordance with the testimony of Camden, who, writing in the previous century, had asserted the superiority of the Spanish iron over the product of the Sussex forges.⁴ Andrew Yarranton, on the other hand, championed the cause of the domestic producers, and severely criticized the imported material. The native ores of the Forest of Dean or of Shropshire will yield a metal, he says, worth £20 a ton for the manufacture of sickles and scythes and other commodities; Spanish iron, on the contrary, "works tough, churlish, and dogged." Yarranton's main objection to the foreign supplies is, however, not so much their quality as their low price, rods of slip Spanish iron being sold at £15 a ton and Swedish bars at £13 a ton. These prices were naturally lower than the English product, since in Sheffield bar iron of domestic production ranged in

¹ "Victoria Co. Hist. of Sussex," ii. 248.

² "Victoria Co. Hist. of Derbyshire," ii.

³ Leader, *loc. cit.*

⁴ Gough's Camden, i. 267.

price from £14 to £17 a ton between 1695 and 1724, and rod iron from £16 to £19 a ton. Clearly at these prices the local material could not compete. "The iron from Sweadland, Flanders [*i.e.*, *Germany*] and Spain," Yarranton complains, "comes in so cheap that it cannot be made to profit here. . . . A tax on all foreign iron is absolutely necessary."¹

A contemporary authority states that in the year 1720 15,000 tons of iron were imported from Sweden and 5,000 tons from Russia, while the home manufacture produced no more than 10,000 tons in all.² Making due allowance for the possibility of exaggeration in this comparison, it is clear that by the eighteenth century these foreign supplies had attained a volume very materially greater than the meagre total of the domestic output. In the middle of the century Sheffield alone was consuming about 4,000 tons of Swedish bar iron annually.³ By 1770 the imports of Swedish and Russian iron had risen to approximately 60,000 tons a year, a quantity still far in excess of the home production.⁴ The Spanish mines also continued to contribute to the resources of the steel-makers. A writer in the *Sheffield Iris* in 1794 informs us that the raw material for some of the finest goods was then obtained from Spain, the superior value of Spanish steel being generally recognized. It was imported from Bilbao and utilized both in Sheffield and in Birmingham. Clearly the English ironmasters were still unable to produce a

¹ "England's Improvement by Land and Sea," vol. i. (1677) 147-9; vol. ii. (1680) 160.

² Macpherson's "Annals of Commerce," iii. 114. Wilkins, "History of Iron and Steel," 24.

³ Gatty, "Sheffield Past and Present," 146.

⁴ "Observations on the Proposed Tax on Pig Iron," 1806.

quality of iron such as was required for the manufacture of fine cutlery. On the other hand the fame of Sheffield-made steel had grown *pari passu* with the consumption of imported iron, so that whereas, up to about 1775, German steel was freely imported into Sheffield,¹ by 1814 the tide had turned, and German cutlery centres like Remscheid were already importing the best cast steel from Sheffield.² Large quantities are still exported to Solingen for the manufacture of fine cutlery.

Russian iron has never had the importance of the Swedish and Spanish varieties. In 1806 Russian iron was selling at £17 to £18 a ton,³ whereas Swedish iron, which cost £25 a ton in 1794, had risen to £40 in 1830.⁴ In the latter year only 13,000 tons of foreign iron was imported, mainly for Sheffield use.⁵ In 1846 the consumption of iron for making blister steel in Sheffield exceeded 32,000 tons, while the number of crucible melting holes increased from 554 in 1835 to 2,113 in 1856, and 2,437 in 1862.⁶ At the present time the foreign supplies are derived mainly from Sweden, though Spanish ores are still imported in quantity, together with a little Russian ore.

The first half of the eighteenth century witnessed a rapid development of the output of home-made iron, and the birth of the native steel industry in its modern sense may be dated at the same time. Hitherto, in Hallamshire, the manufacture had been practically controlled by the lord of the manor, but rival iron-

¹ Turner, "Manufacture of Files." ² Diary of T. A. Ward.

³ "Observations on the Proposed Tax on Pig Iron," 1806.

⁴ Jackson. ⁵ McCulloch, "Dictionary of Commerce."

⁶ Hunter, "Hallamshire," ch. ix. Gatty, "Sheffield Past and Present," 311.

works were established about 1700, and prices were depressed by the competition. The pioneers in the steel manufacture were Samuel Shore and George Steer. The former was making blister steel by 1709, and the latter in 1719, according to the record preserved, "first began to lay iron in furnace to make steel."¹ Shear steel, still known as "German steel," was being made by Ambrose Crowley at Newcastle about 1730, and about ten years later Benjamin Huntsman's invention of the crucible process of making cast steel opened the door to the local production of the finest grades of cutlery material. The actual manufacture of steel by the new process began a few years later, when Samuel Walker put down his first pot furnace.² Shear steel, on the other hand, continued to be obtained from Newcastle and Germany down to 1775, but in 1785 forges for the manufacture of shear steel from blister bars were erected in Sheffield.³ Already at the beginning of the century the Sheffield iron-making interests had been strong enough to suppress a project, which had originated in the town, for promoting the manufacture of iron in Sweden, and to procure an Act of Parliament in 1718 to prohibit those interested from "seducing artificers in the manufactures of Great Britain into foreign parts."⁴ The importance of the new steel industry to the cutlers was such that the Cutlers' Company itself undertook the operation of a steel-works, an enterprise which lasted over a period of twelve years.⁵ Swedish iron was the material employed,

¹ T. A. Ward, "Diary," 237.

² Hunter, "Hallamshire," 171.

³ Henry Turner, "The Manufacture of Files," 1862.

⁴ 5 Geo. I, c. 27.

⁵ 1759-72.

imported, as usual, through the agency of Hull merchants.

The production of ordinary cast iron was stimulated during this period by the gradual substitution of coal for wood fuel. Collieries, from which an abundant supply could be drawn, existed in the immediate neighbourhood, and though these were in the sole possession of the Dukes of Norfolk, no undue advantage appears to have been taken of the monopoly.¹ Meanwhile the water power of the district was fully utilized, and by Defoe's time numerous works were established on the river banks, the power being used not only for the grinding of cutlery wares, but also for the forging, slitting, and other operations involved in the preparation of the iron for the local trades.² An enumeration in 1770 shows that there were then 28 water-driven tilts and forges on the Don and its Hallamshire tributaries, a number which had risen to 35 in 1794.³ More than one of these ancient water-driven tilt hammers is still in operation.

The cutlers were not unnaturally hostile to attempts to restrict the supply of iron to the domestic product, and in 1731 and 1738 vigorously opposed proposals for placing an import duty on this essential commodity. Again, in 1750, the cutlery interests were able, in spite of the ironmasters' opposition, to carry a petition in favour of the free importation of American iron, although the ironmasters were supported by the tanners of Sheffield, Doncaster, Gloucester, and Southwark, who used the ingenious argument that cheap foreign iron would injure their

¹ Hunter, "Hallamshire," ch. ix.

² "Tour through Great Britain."

³ "A List of all the Works upon the River Dunn."

trade by diminishing the use of British timber and so restricting the supply of bark.¹

In the second half of the eighteenth century the British iron trade became firmly established against all outside competition. Its progress during this period is marked by the introduction of Smeaton's cast iron bellows in 1760, by the application of the steam engine to the driving of the blast, and by Cort's invention of the rolling mill for reducing bars of metal to the required dimensions in 1783. Formerly this latter object had been accomplished either by direct forging, or by means of the slitting mill, a device which appears to have been introduced from the Continent about 1590 by one Godfrey Bochs of Liège.² Tradition asserts that Richard Foley of Stourbridge surreptitiously copied a Swedish slitting mill, and used it successfully in his works from about 1650. Earlier forms of the slitting mill driven by water power had, however, been patented in 1606 and in 1618.³ A good idea of the method employed for preparing metal for the cutler's use in such a mill may be gathered from an eye-witness's description in 1755 of the operation of a slitting mill producing nail rods in Birmingham. "They take a large iron bar, and, with a huge pair of shears worked by a waterwheel, cut it into lengths of about a foot each. These pieces are put into a furnace and heated red hot, then taken out and put between a couple of steel rollers, which draw them to the length of about four feet, and the breadth of about

¹ "Journal of the House of Commons," xxv. 1018, 1019, 1047 1051.

² Gough's Camden, i. 328.

³ Swank, "Growth of British Iron Industry."

three inches. Thence they are immediately put between two other rollers, which, having a number of sharp edges fitting each other like scissors, cut the bar as it passes through into about eight square rods. After the rods are cold they are tied up in bundles.”¹ The first rolling mill in Sheffield for the preparation of cutlery material was established in 1769. During the last decade of the century the output of iron was doubled, and in 1799 wrought and cast iron to the value of £1,500,000 was exported. A return of 1796 enumerated 104 furnaces in England and Wales and 17 furnaces in Scotland, producing respectively 108,000 tons and 16,000 tons annually. It must be remembered that up to this time no country outside Britain had adopted the method of using coal for smelting iron ore.²

The period of most rapid expansion in the British iron industry falls in the second quarter of the nineteenth century. During this interval the output was multiplied sixfold, and rose in 1850 to a point of unchallenged supremacy, representing no less than one half of the total iron production of the world—a proportion which has never since been exceeded.

¹ S. Lloyd, “The Lloyds of Birmingham,” 25.

² “Observations on the Proposed Tax on Pig Iron,” by an Iron Master. Sheffield, 1806.

CHAPTER IV

THE RISE AND LOCALIZATION OF THE INDUSTRY

THE craft of the smith, it has been said, is the earliest example of a specialized industry. These artificers were at all events to be found in every primitive settlement, furnishing the essential implements for the arts of peace or the prosecution of war. Thus, wherever iron was worked, it is natural to suppose that the production of rude and simple cutting tools would be attempted ; finer goods, on the contrary, could only be made from picked materials and by men of exceptional skill and adroitness, who had acquired their technique by inheritance from earlier generations. This later stage of development involves, in fact, both the concentration of population, such as was found in the mediæval town, and also the existence of a specialized craft, such as made its appearance in suitable centres of trade and industry in very early times, fostered by the gild organization and local monopoly. In London a cutlery gild existed as early as the thirteenth century, and in the year 1298 we have definite evidence of its activity, revealed by an attempt to suppress the illegal sale of "foreign" knives.¹ We know further that by 1328 the cutlers'

¹ Riley, "Memorials of London." The terms "foreign" and "foreigner" commonly either meant "provincial" or referred to

craft was regulated by a governing body elected by the members of the trade,¹ and the gild ordinances of 1344, which have been preserved, prove the existence of a fully organized body of craftsmen, supervising and controlling the trade by means of the regular gild machinery. The chief regulations were those which insisted on the full term of seven years' apprenticeship for persons entering the trade, and provided for the regular appointment of overseers with power to search out illegal goods. Such officers were to be appointed for one year, being sworn to enforce all rules and ordinances and to report all defaulters to the City Chamberlain, "sparing no man for favour, and grieving no person for hate."² The ordinances also contain a stringent regulation by which nightwork is prohibited, as tending to lower the standard of workmanship.

Fresh ordinances were adopted by the cutlers in 1380,³ which point to an increase in the scope and authority of the craft. The control of the overseers was made absolute over all who would follow the trade. They were empowered to determine the maximum wages to be paid to "illegal" workmen who had not served a proper apprenticeship. Other regulations were intended to protect the consumer from the imposition of fraudulent wares; thus wooden handles other than those made of "dudgeon," or boxwood, were to be left uncoloured, and only sterling silver was to be used in the embellishment of knife hafts those outside the freedom and privileges of a particular city or company. Aliens were usually described as "not denizens" or by some such expression as "outlandish strangers." Cf. Strype's *Stow*, 402-5.

¹ Unwin, "Gilds and Companies of London," 88.

² Herbert, "Livery Companies."

³ Riley, *loc. cit.*

or sheaths. Nightwork was again forbidden, and the hawking of goods at "eve chepings" was strictly prohibited. This last regulation is a typical instance of the warfare of the craft against the chapmen and itinerant vendors, who found a market for the wares of such of the poorer craftsmen as had no shops of their own, and through whom inferior wares of provincial and foreign origin began to find an illicit outlet. Two centuries later the extent of this traffic was a standing grievance and a serious menace to the metropolitan cutlers, not only because their local monopoly was infringed, but also because the independence of the individual craftsman, especially the needier individual, was undermined when he gave up selling his goods himself and became dependent on a middleman. In 1592 the London Company protested against the "merchants which are becoming retailers of deceivable wares," to the grief of the poor handicraftsmen, many of whom were driven to leave their occupation and become day labourers.¹ The chapmen were in fact the precursors of the factors and middlemen of the eighteenth century, through whom the merchant function became separated from the manufacturing side of the business.

The cutlers' fraternity, like other crafts, was located in a definite street or quarter of the city. "Les Cotillers en la Cotellarie" is the phrase used in 1327, a district which was probably located near the Mercers' Hall in the Poultry, though the Cutlers' own Hall was subsequently erected in Cloak Lane. In the sixteenth century² there was also a "Cutler Street" in Houndsditch, which still survives.

Up to the beginning of the fifteenth century, the

¹ Leader, *loc. cit.*, i. 157.

² Strype's Stow, ii. 298.

cutlers' gild included only one branch of the artificers employed in the production of cutlery wares. There were in fact three independent crafts in the trade, namely, the Cutlers or haftmakers, the Bladers or bladesmiths, and the Sheathers or sheathmakers, and in the fourteenth century we find each of these sectional crafts taking their proper share in the activities of the City: the bladesmiths furnishing a Sheriff from their ranks in 1338; the cutlers contributing in 1355 to the cost of the French wars, and taking part in the election of municipal officers at the Guildhall in 1376. We do not know when the bladesmiths and sheathers had become differentiated and separately organized, but we know that a similar triple division of the trade existed at York¹ in the fourteenth century, and probably at a later date in other English cutlery centres.

Continental parallels may also be cited. In Paris the bladesmiths and the haftmakers were united in separate *métiers* at this time; so too the sword-cutlers of Solingen, who were also knife-makers, were divided into three crafts of bladesmiths, grinders and temperers, and cutlers or finishers a century later;² while in Ruhla (Thüringen) the bladesmiths were distinct from the haftmakers as late as the seventeenth century.³ There was further some overlapping between the different crafts in London; there was, for example, a marked affinity between the work of the bladesmiths and that of the blacksmiths, while the use of the precious metals by the cutlers brought these into open conflict with the goldsmiths. The

¹ Guildhall, York, MS. A/7, 1376-1478.

² Thun, "Die Industrie am Niederrhein," ii. 8. See below, p. 369.

³ Unwin, "Industrial Organization," 27.

bladesmiths, Stow tells us, were an important craft, and "divers of them proved wealthy men." Their ordinances in 1408 insisted that every master should stamp his mark on his goods, and that the points and edges of the blades must be made hard throughout.¹ Similarly the blacksmiths' ordinances of 1372 had included regulations for striking the maker's mark. Both these crafts produced knives, lance-heads, and axes, though the former also made sword and dagger blades; there was therefore a close similarity in their work which must have caused confusion, and must have been a serious hindrance to effective searching and supervision. The difficulties between the cutlers and the goldsmiths arose out of the fact that the Goldsmiths' Company was responsible for the quality of all work done in silver or gold, which metals the cutlers used for embellishing their knife hafts and sheaths. As early as 1327, in Letters Patent granted to the Goldsmiths by Edward III, we find the complaint made that "the Cutlers in their workhouses cover tin with silver so subtilely, and with such sleight, that the same cannot be discerned and severed from the tin, and by that means they sell the tin so covered as fine silver, to the great damage and deceit of us and our people."² Seventy-six years later the same dispute recurs, the Goldsmiths claiming to exercise the right of search over cutlery wares as heretofore. The Mayor, who was called upon to arbitrate between them, upheld the Goldsmiths' claim, and declared that "the Wardens of the mystery of Goldsmiths for the time being, subject to the oversight of the Mayor and Aldermen of the City, had from old times been

¹ Riley, *loc. cit.*

² Herbert, ii. 288.

accustomed to have the assay of the gold and silver work of the said Cutlers within the City of London.”¹

Apart from such difficulties, the fact of the subdivision of crafts *pari passu* with the specialization of the various processes of the manufacture, made it impossible for the cutlers to maintain the local monopoly and the standard of workmanship, except by co-operation between the different sections. Thus when the bladesmiths, in 1408, found their trade invaded by the knives and blades brought by “foreign folks from divers parts of England,” stamped with marks resembling their own, they found a remedy in inducing the cutlers to decree that none of their members should buy any such goods, but should deal only with the freemen bladesmiths, and these in turn undertook not to raise their prices unadvisedly.² At the same time the cutlers set up ordinances jointly with the sheathers, providing for the proper inspection of sheaths.

Wherever sectional organization prevailed, as was the case with the cutlers’ craft, there was an inevitable tendency for the control of the whole group of trades to pass to the leading member, which latter assumed the functions of the middleman, and was responsible for the distribution of products. Examples of this tendency are found in other trades. In the various branches of the woollen industry, for instance, the trading function began to be specialized and to exert a dominant influence even in the fourteenth century, so that in these important crafts the true handicraft form—which implies the union of independent masters trading as well as working on their own account—

¹ Herbert, i. 104.

² Riley, *loc. cit.*

began to break down at a very early time.¹ So, too, the dominance of the London saddlers over the co-operating branches of joiners, painters, lorimers and gilders at this period was only kept in check by the strength of the handicraft organization in the subsidiary crafts.² In the case of the Paris cutlers the mercers at first assumed the trading function, and supplied the haftmakers with blades of provincial origin. The bladesmiths (by whom in this case the name of "cutlers" was appropriated) united with the hafters in 1367 and obtained joint rights of search and control of the trade.³ Soon afterwards the bladesmiths became dominant, and ultimately assumed full authority over the trade. In Solingen, on the other hand, it was the cutler who bought up the unsaleable wares of the forgers, haft-makers, and ferrule-makers, and built them up into complete knives. And, since there were many poor craftsmen who were outside the privileges of guild membership, the cutlers began to employ these "illegal" workers as wage-earners, just as has been the case with "little masters" of Sheffield in modern times. At the same time a trading group among the craft members in Solingen assumed the leadership of the whole industry, and in the sixteenth century both the sword and knife cutlers were reduced to a subordinate and dependent status.⁴

In the agreements above noted among the branches of cutlery makers in London, we see a tendency for the cutler, who put the knife together and sold it as a finished article, to obtain a share in the control of the work of the sheathers and bladesmiths. The latter

¹ Unwin, "Industrial Organization," 28-30.

² *Ib.* 22.

³ *Ib.* 25.

⁴ Thun, *loc. cit.* ii. 11, 25.

appear to have been too strongly organized to accept the position of a subordinate craft, but the tendency to consolidation was strong, and it is not surprising to find the three fraternities uniting into one Company in 1415, having obtained the grant of a Charter of Incorporation. From this time their corporate independence and autonomy as one of the minor Livery Companies was secure. The cutlers' craft in Edinburgh and Hull, on the other hand, became subordinate sections in amalgamated fraternities dominated by a powerful trading interest. In Edinburgh also the cutlers were absorbed in 1483 into the general corporation of Hammermen, which included, in addition, the crafts of blacksmiths, goldsmiths, lorimers, saddlers and armourers.¹ So, too, in Hull, a century later, we find the cutlers united, by the authority of the mayor and burgesses, with such diverse crafts as pewterers, plumbers, glaziers, painters, musicians, stationers, and bookbinders, as well as goldsmiths and smiths.²

As far as the London bladesmiths were concerned, their absorption in the amalgamated Company in 1415 does not appear to have been complete, since separate ordinances were granted to a body of bladesmiths in 1463,³ and their existence as a distinct craft is mentioned as late as 1531.⁴ Possibly there were several sections of the craft, for another group seems to have been incorporated with the armourers in 1515.⁵

Later Charters were granted to the London Cutlers' Company in 1422, 1509, 1553, 1558, 1607,

¹ Ashley, ii. 164.

² Mallet, "Two Thousand Years of Guild Life," 262.

³ Unwin, "Gilds of London," 171.

⁴ Stow.

⁵ Ashley, ii. 163.

1689, and 1703, that of 1607 being the principal deed.¹ In the latter² the scope of the trade is defined so as to include all persons "making or working for sale . . . any manner of swords, daggers, rapiers, hangers, wood-knives, penknives, razors or surgeons' instruments, or small knives, skeynes, hilts, pommels, battleaxes, halberts, or any other weapons or blades or other things belonging to the mystery." An account of the trade in 1747 informs us that "their Business is making, forging, tempering (in which Part some have been remarkably famous), and mounting all Sorts of Knives, Razors, Sheers, Scissars, Surgeons' Instruments, and Sword-Blades; but making the Hilts is a different Trade." The work in this "ingenious branch of the Smithery" is spoken of as highly skilled, though not laborious, and many cutlers we are told kept handsome shops, and dealt in such things as buckles, buttons, and canes. The premium required by a master on taking an apprentice was from £10 to £15, and the boy had to work from 6 a.m. to 9 p.m. A capital of £50 is said to be enough to set up a journeyman, of whom there were but few, as an independent master.³

Even in early times the London Cutlers had no monopoly of the industry except in their own city. Indeed, until commercial intercourse, both external and domestic, was fully developed there could be no definite concentration into national centres of production, and the business of making serviceable cutting tools must have been widely diffused. According to

¹ Liv. Co. Com., iii. 336.

² Given *in extenso* in Cheesewright, "History of the Cutlers' Company."

³ "A General Description of all Trades," London, 1747.

Stow, knives had been made "in divers parts of this Kingdome" for many hundred years prior to Elizabeth's reign, and while there is nothing to show where the provincial cutlers were located whose "foreign" knives gave rise to the proceedings of the London Cutlers in 1298 and 1408, we have definite evidence of the manufacture of razors at Leicester and of knives at "Maxstead" (? Thaxstead) as early as 1250.¹ That the trade was already established in Sheffield and its neighbourhood in the fourteenth century is shown by the mention, in an inventory of goods issued from the Royal Wardrobe at the Tower about 1340, of "*i Cultellum de Shefeld*" as well as of knives of "*Asshebourne*."² This is corroborated by the evidence of the Poll Tax returns for the West Riding in 1379, which have happily survived.³ From these we learn that in Sheffield, and in the neighbouring parishes of Rotherham, Tinsley, Handsworth, and Ecclesfield, out of the small proportion of the taxable inhabitants whose occupations are stated, there were then five cutlers, thirty-seven smiths, three arrowsmiths, and two families named "Coteler." The occupation of arrowhead-smith, we may note, is mentioned as late as 1603, and occurs once even in 1660.⁴ Doubtless more of these humble cutlery craftsmen were included amongst those whose occupation is not stated in the returns; though at the highest their number must have been very small, since the total population of Sheffield over sixteen years of age numbered only 529 persons. Sheffield,

¹ Rogers, "Six Centuries of Work and Wages," 105.

² Hunter, "Hallamshire," 59.

³ Yorks. Arch. Ass., 1882.

⁴ Hunter, 59. Leader, "History of the Cutlers' Company," i. 38.

however, was not the only cutlery centre in Yorkshire. In York itself there existed in 1415 separate guilds of cutlers, bladesmiths, and sheathers,¹ and the will of a York cutler is recorded in 1395. In the fifteenth century, among the registered wills of inhabitants of York which state occupation, are those of a sheather (1428), four cutlers,² and four bladesmiths,³ while "Doncaster knives" are mentioned in 1446. The cutlers in Hull at the end of the sixteenth century have been already noticed, and here, also, the industry had an early origin, since there is preserved the will of a Hull sheregrinder, registered in 1459.⁴ At Ferry Fryston, near Pontefract, there were also in 1379 eight smiths, one "shether," and two families named "Coteller." Again, on the Derbyshire side of Sheffield we find that in the neighbouring town of Chesterfield the name "Stephen le Cutiller" occurs in 1338, and "John le Knyfsmyth" a generation later; there was also a Smiths' Guild in this town (temp. Ed. III), and the name Knyfsmithgate, which occurs at this time, still survives as a street name.⁵ So also at Holbrook, near Staveley, there was a scythe mill in 1489; another is mentioned in 1511 at Derby, where the smiths' craft goes back to the beginning of the fourteenth century.⁶

In the sixteenth century there are ample indications, in the recorded wills, of the existence of cutlery workers of substance and property, not only in Sheffield and its immediate vicinity, but throughout a large area of the surrounding country. The probate

¹ York Guildhall MS.

² 1405, 1429, 1433, 1443.

³ 1430, 1449, 1453, 1480. Yorks. Arch. Soc., vol. i.

⁴ Yorks. Arch. Soc., vol. i.

⁵ Jeayes, "Derbyshire Charters."

⁶ *Ib.*

registers at York for this period contain particulars concerning the following artificers: In Sheffield itself, thirty-nine cutlers, five sheathers, and one fletcher. Other cutlery workers are found at Ecclesfield, Rotherham, Doncaster, Barnsley, Worsborough, Cawthorne, Newark, Halifax, Nottingham, North Cave, Beverley, and York.¹ Further, in the generation immediately preceding the Hallamshire Cutlers' incorporation (1600-24), we find, in the Sheffield district alone, the records of forty-one cutlers, eight sheathers, seven shearsmiths, and three arrowheadsmiths.

Looking further afield, we find other rivals to the London craftsmen at Thaxstead in Essex, where a cutlery guild existed in the fourteenth century, including workers in the various branches, such as grinders, hafters, and bladesmiths.² In the fifteenth century we have the cutlers' craft of Edinburgh, and by the time of Elizabeth we find the industry located at Salisbury, Woodstock, and Godalming.³ At Norwich the bladesmiths set up ordinances about 1450 in conjunction with the other metal-working industries. The cutlers of Hereford were in 1554 united with the goldsmiths, blacksmiths, and other crafts, and a similar combination of crafts is found at Chester.⁴ In the Staffordshire villages of Himley and Swinden there were in Queen Elizabeth's time, according to Camden, several noted blade-mills, where scythes, sickles, and axes were ground to a fine edge. Moreover, the existence of an ancient Knifsmith Street in Bristol attests the presence of cutlery workers in the West

¹ Yorks. Arch. Soc., vols. i, xi, xix, xxi, xxiv.

² Leader, *loc. cit.*, i. 4.

³ Hunter, *loc. cit.*, 149.

⁴ Unwin, "Industrial Organization," 83 n.

country,¹ and a reference to Tunbridge as a place "where fine knives are made" offers a clue to yet another cutlery centre.² So too when John Leland travelled through the Midlands in 1535-43 he not only found "many smiths and cuttelars" in Hallamshire, and "veri good smiths for all cutting tools" at Rotherham, but in Birmingham also he found the cutlery industry established as a branch of the hardware manufacture. "I came through a praty strete or ever I enteryd into Bremischam towne. This strete, as I remember, is caullyd Dyrtey [*now "Deritend"*]: in it dwelle smithes and cuttelers." There were then, he tells us, "many smithes in the towne that use to make knives and all maner of cuttynge tooles, and many lorimers that make bittes, and a great many naylor, so that a great part of the towne is maintained by smithes," who "have yren out of Staffordshire and Warwickshire."³ So again, in 1575, did Camden find Birmingham "swarming with inhabitants, and echoing with the noise of anvils (for here are great numbers of smiths)."

Another interesting instance of cutlery localization and of the tenacity of a small rural industry is afforded by the manufacture of scythes in Belbroughton, Worcestershire, and the villages adjacent. Here the occupation of scythe-smith is mentioned as early as 1564. Thus the trade is at least 350 years old, and the wills of six scythe-smiths and six scythe-grinders proved between 1603 and 1627, who belonged to villages within a radius of five miles, serve to show that the

¹ Hunt, "Bristol," 52. Qu. Ashley, i. 96.

² Bullein, "A Dialogue against the Pestilence," 1573. Cf. Lyly's "Mother Bombie" (1594), Act ii. sc. 1: "Pop three knaves in a sheath, I'll make it a right Tunbridge case, and be the bodkin. —Nay, the bodkin is here already; you must be the knife."

³ "Itinerary," ii. 96 (1908 ed.).

occupation was well established at that time.¹ Possibly other cutlery crafts were also carried on, for there was at least one cutler in Bromsgrove in 1622. No less than eighteen waterwheels used for grinding, etc., which are still in operation within four miles of Belbroughton, testify to its continued vitality.

Finally we may notice that by this time the London cutlers had rivals at their very doors, since by the middle of the sixteenth century there was an independent colony of cutlers established in Westminster, claiming exemption from control by the London fraternity, while the latter on their side were anxious to bring them under the jurisdiction of their Company.²

These instances—and doubtless the list might be augmented—point to a very wide distribution of the industry. Apart from the chief centres of London and Sheffield, however, only in Birmingham and Salisbury did the manufacture acquire any considerable importance. The reputation of Birmingham so far as cutlery was concerned depended upon swords and daggers rather than on knives, though the latter were certainly made there throughout the seventeenth century, and are mentioned as being imported into Ireland.³ The local raw material employed in Leland's time must no doubt have been superseded by steel of good quality, for during the Civil War 15,000 swords were supplied by Birmingham makers for the Parliament forces,⁴ and though their products were objects of contempt to the London Cutlers, who declared "as for the Bromedgham blades they are no way fit or

¹ Worces. Hist. Soc., "Wills" (1907).

² S.P.D. Eliz., xiii. 36; Jas. I, cxxviii. 46.

³ Dent's "Making of Birmingham," 47.

⁴ Langford, "Staffordshire and Worcestershire," ii. 579.

serviceable for his Majesty's store,"¹ these goods seem elsewhere to have won a fair reputation. The sword-blade trade declined in Birmingham during the eighteenth century, but was revived by the brisk demand caused by the volunteer movement at the close of that period, when the demand outran the supply, and the London merchants begged for freedom to import German blades.² In 1780 there were in Birmingham, in addition to the swordmakers, 8 cutlers, 15 file-makers, and 12 makers of saws and edge tools.³

At Salisbury, on the other hand, the cutlers won a wide reputation for the quality of their wares, which were noted for their excellence throughout the eighteenth century. They are, for instance, mentioned in 1715 in Gay's "Epistle to the Earl of Burlington—A Journey to Exeter," where he comments on the attractions of Salisbury:

"Who can forsake thy walls and not admire
The proud Cathedral and the lofty spire?
What sempstress hath not proved thy scissors good?"

Half a century later Christopher Anstey, in the "New Bath Guide" (1766), testifies to the continued importance of the industry—

"Let Bristol for Commerce and Dirt be renowned,
At Salisbury Pen-Knives and Scissors be ground."

Even in the nineteenth century the name of Salisbury cutlery still ranked high, some of the finer descrip-

¹ S.P.D. Ch. I, ccclxxvii. 47.

² Dent, *loc. cit.*, 147, 260.

³ Timmins, "Dr. Priestley in Birmingham."

tions being still produced, though only in small quantities.¹

We may surmise that up to the time of Elizabeth the best continental cutlery was greatly superior to the English, both in material and workmanship, a conclusion reinforced by a study of museum specimens of English and foreign made cutlery of the fifteenth and sixteenth centuries. Hitherto the products of the trade had consisted of "coarse and uncomely knives," but in the latter half of the sixteenth century the reputation of the home-made wares rose very rapidly, fine knives and knife hafts, according to Stow, being first made in London about 1563, and we are assured that by the time of James I "the best and finest knives in the world were made in London."² The following allusion points to the inferior quality of the cheaper goods sold in London in Elizabeth's time; it doubtless refers to the ancient practice of welding a steel edge on to an iron blade: "This argument cuts like a Ledenhaule knife, where (as they say in common speech) if one poure on steele with a ladell, an other comes and wipes it off with a feather."³ Probably, however, Leadenhall knives were not necessarily of London manufacture, since in 1624 the London Cutlers obtained an ordinance appointing Leadenhall as the only place where provincial cutlery might be sold, and that only after the goods had been properly searched by the Wardens.⁴

Further evidence of the activity and improvement

¹ McCulloch, "Statistical Account of the British Empire" (1839), i. 704.

² Strype's Stow, ii. 298.

³ Stephen Gosson, "Playes Confuted" (1582).

⁴ Leader, *loc. cit.*, i. 157.

of the trade in the fifteenth and sixteenth centuries is afforded by the restrictions on the importation of foreign cutlery. The London gild was now at the height of its strength and influence, and the craftsmen naturally desired to monopolize the home market. The statute of 1463,¹ which prohibited the importation of a large variety of manufactured articles, owed its existence mainly to their influence. This Act prohibited the importation not only of knives and daggers, but also of scissors, tailors' shears, razors, and sheaths for knives. The prohibition expired in 1483, and was not renewed for twelve months, during which time large quantities of foreign cutlery entered the English market. On the other hand there is evidence that cutlery was being exported to the Continent before the close of the century.² The sources of the foreign imports may be gathered from entries in the Customs House books of Henry VIII, which record the importation of French and German cutlery, "knives of Cologne" being specially mentioned.³ The latter were no doubt the products of Solingen in the Duchy of Berg, still the chief continental centre for the production of cutlery. The temporary prohibition on knives, daggers, wood-knives, bodkins, shears for tailors, scissors, and razors was re-enacted in 1550.⁴ Foreign competition seems to have continued in an acute form, knives being brought in large quantities from Flanders and other places,⁵ so that the trade of the cutlers was greatly damaged and hindered, and the prohibition was renewed in 1563

¹ 3 Ed. IV, c. 1.

² S.P.D. Eliz., cclv. 56.

³ Compare the term "Cullen Knives," used in 1660: 12 Ch. II, c. 4.

⁴ 3 Ed. VI, c. 4.

⁵ Stow.

"till the end of the next Parliament."¹ Similar restrictions were imposed the following century in 1628 and 1641.²

Turning to Sheffield, we learn from Chaucer's passing mention in the Reeve's Tale of a Sheffield "thwytel," or whittle, that the trade had already acquired a more than local celebrity in the fourteenth century, even if it then embraced only the simplest forms of cutlery. The term "whittle"—which is still familiar to Sheffield cutlers—meant, as we know from contemporary evidence, a straight iron blade set in a wooden handle, the latter generally consisting of dudgeon or box-wood. Early bequests of such knives, like the "unum cultellum cum manubrio de murro, anglice thwetyll" left by a York goldsmith in 1374,³ are evidence of the value placed upon them by their possessors.

By the reign of Elizabeth Sheffield cutlery had won a considerable reputation, as is clearly shown by numerous literary allusions. Sheffield knives are mentioned, for example, in Laneham's "Princely Pleasures" (1575) and in "The Cobbler of Canterbury" (1590) there occurs this passage: "Women's wittes are like Sheffield knives, for they are sometimes so keene as they will cutte a haire, and sometimes so blunt that they must goe to the grindstone." Again, in the "Witch of Edmonton," a play by Dekker, Ford, and Rowley (c. 1620), we have this reference: "But see the bridegroom and bride come—the new pair of Sheffield knives, fitted both to one sheath." Moreover, unlike the allusions to "Bromedgham blades" mentioned above, the comments on the quality of the

¹ 5 Eliz., c. 7.

² 3 Ch. I, c. 4; 16 Ch. I, c. 4

³ Surtees Soc., iv. 91. Cf. *ib.* ii. 88; iii. 96.

Sheffield wares are often markedly eulogistic. Thus Peter Bales, author of "The Writing Schoolmaster" (1590), bears testimony to the excellence of the Sheffield goods. "First, then, be the choice of your penknife: a right Sheffield knife is best; a good razor is next, being not too thick nor too thin grounded. Many other knives there are indifferent good, but these two first-named hold commonly best in proof."¹ Again, in Nashe's "Lenten Stuff" (1599) occurs the phrase: "Then tell me if our English sconces be right Sheffield or no." "Right Sheffield," then, was synonymous with excellence, even at a time when the Sheffield manufactures are rightly said to have "discovered more of industry than of ingenuity,"² and the goods produced were of a simple character. Fuller, visiting the town in the full swing of the seventeenth-century expansion, found it "a remarkable market," already regarded as the staple town for knives, those of the cheaper sort, "for the common use of the country people," being mostly made there; and he marvels "how a knife may be sold for one penny."³ If a superfine finish was not attempted, the reputation for serviceability was the more fairly won. The knives of the Sheffield craftsmen, as stated by the Act of Incorporation, were "knives of the best edge," and we may understand the proud modesty with which the Earl of Shrewsbury, sending a case of "Hallamshire Whittels" to Lord Burghley in 1575, had referred to them as "such things as my poor

¹ Gatty's Hunter, 59 n.

² Aiken, "Description of the Country round Manchester" (1795), 547.

³ Fuller, "Worthies," ii. 166. A century later it was not uncommon to find knives selling for as little as a farthing apiece, including the sheath (*Sheffield Iris*, July 5, 1830).

country affordeth with fame throughout the realm."¹ Even in the sixteenth century Sheffield knives were finding their way into foreign markets, being exported from Chester and Liverpool as early as 1586 and 1589.² The Act of Incorporation, 1624, also states definitely that the Sheffield cutlers supplied with their wares not only "most parts of this Kingdom," but also "other foreign countries."

The rapid strides made by the Sheffield industry in the seventeenth century gave rise to perpetual agitation among the London cutlers, who resented the invasion of their market by the provincial goods. In 1592 the London Company complained of "English foreigners" who were caught "hawking in the street and highways with deceivable wares,"³ as well as of alien immigrants who did the same. The deplorable feature of the competition was the systematic manner in which London marks were counterfeited by the country makers—a breach of commercial honesty which bore fruit in later years, when London got the credit for much fine Sheffield cutlery. Nor was the blame confined to one party, for the London cutlers themselves were accused of stamping Spanish and other marks on their goods.⁴ The provincial cutlers, however, seem to have been constant offenders—seizures of Sheffield knives and Birmingham knives, swords, and daggers being frequently recorded, and the complaints of the London cutlers were loud and continuous. In 1624, for example, they are found asserting that the dagger, the "public and general" mark of the Cutler's Company, is "ordinarily struck"

¹ Hunter, *loc. cit.*, 149.

² *Ib.* 59.

³ Leader, *loc. cit.*, i. 157.

⁴ S.P.D. Ch. I, ccccvii. 60, 2.

by the craftsmen of Sheffield and Birmingham.¹ This special trouble was due to the lack of adequate legal protection for the corporate mark, and the dagger mark continued long afterwards to be freely granted by the Sheffield Company to its own members. The stamping of London marks in Sheffield was officially sanctioned even as late as 1785,² and the practice was only finally checked by an Act of Parliament in 1819.³ Not only were the factors who dealt in Sheffield and Birmingham cutlery repeatedly raided for the purpose of discovering goods with London marks—and too often with success—but some of the London manufacturers themselves were also convicted of making up provincial blades and forging London marks on them.

These controversies reflect the increasing importance of Sheffield, and foreshadow the relative decline of the London industry which took place in the eighteenth century, though the latter retained the leading reputation for the finest goods until the beginning of the nineteenth century.⁴ Since then, however, the London manufacture has dwindled away. Already in 1840 it could be said that from Sheffield proceeded nearly all the cutlery made in the kingdom, including a great part of the London-made knives and razors, stamped with the names of metropolitan cutlers, who took advantage of the popular prejudice to charge high prices for their "town-made" goods.⁵ The resentment aroused by

¹ *Leader, loc. cit.*, i. 20, 158. ² *Ib.* 118. ³ 59 Geo. III, c. 7.

⁴ Macpherson, "Annals" (1805), ii. 138; McCulloch, "Dictionary of Commerce" (1832).

⁵ Porter, "Progress of the Nation"; McCulloch, "Statistical Account" (1839), ii. 704; "Book of English Trades," London, 1824.

this practice is voiced by a writer in 1823: "How long will the men of Hallamshire permit Cockney manufacturers, including renegades from hence, to traduce their wares and persuade the public that they are inferior to town-made articles? London would have little title to boast if all its obligations to Sheffield were acknowledged."¹ The ordinances of the London Cutlers' Company had by now fallen into disuse and become ineffective, though it was still usual for cutlery dealers and workers to take out their freedom in the Company, and apprentices were occasionally bound and enrolled by the Company even as late as 1876-80.² At the Exhibition of 1851 there were ten London exhibitors in the Cutlery Section, and also one each from York and Salisbury, as well as scythes from Belbroughton, showing the survival of the manufacture in these ancient seats.

The 1862 Exhibition again produced a case of assorted cutlery of Salisbury manufacture, including razors, scissors, and knives, and a case of London-made table cutlery. Except for table-knives, however, the cutlers of London in 1851 were merely factors for Sheffield firms, though in some cases they still hafted Sheffield-made blades, stamped with London names to order.³ Even this work has now practically disappeared, though even as late as 1884-6 there was in existence a trade society of London cutlers and surgical instrument makers.⁴

The persistent survival of the industry in and near its ancient home at Salisbury, though on a minute

¹ *New Times*, December 21, 1823.

² Liv. Co. Comm.

³ Le Play, "Les Ouvriers Européens," 1855.

⁴ Report on Trade Unions, 1891, Cd. 6475.

scale, is indicated by the following occupational records derived from the Census returns :

CUTLERY WORKERS IN SALISBURY.
(CUTLERS, GRINDERS, AND SCISSORS-MAKERS.)

| | 1841. | 1851. | 1861. | 1871. | 1881. | 1891. | 1901. |
|-------------|-------|-------|-------|-------|-------|-------|-------|
| Males ... | 28 | 41 | 36 | 29 | 27 | 12 | 17 |
| Females ... | 1 | — | 1 | 4 | 6 | 1 | — |
| Totals ... | 29 | 41 | 37 | 33 | 33 | 13 | 17 |

The concentration of the industry in Sheffield was thus virtually complete by the middle of the nineteenth century ; at least this was true of England. In Scotland it is interesting to note that, while none of the early cutlery-making centres attained any special predominance, the general diffusion of the manufacture was so persistent that even in the Census returns of 1901 small groups of workers in the trades are found in nearly every county. The only definite localization which has taken place is to be found in Glasgow, where about one half of the Scottish workers are now to be found.

CUTLERY WORKERS IN SCOTLAND, 1901.

| | TOTAL SCOTLAND. | | | CITY OF GLASGOW. | | |
|-----------------------------|-----------------|----------|--------|------------------|----------|--------|
| | Males. | Females. | Total. | Males. | Females. | Total. |
| Cutlers and Scissors-makers | 271 | 10 | 281 | 126 | 5 | 131 |
| File-makers | 136 | 14 | 150 | 59 | 3 | 62 |
| Saw-makers | 197 | — | 197 | 80 | — | 80 |
| Tool-makers... | 809 | 29 | 838 | 470 | 7 | 477 |

RISE AND LOCALIZATION

Ireland has also its handful of workers in these trades, the principal centres being the cities of Dublin and Belfast.

CUTLERY WORKERS IN IRELAND, 1901.

| | TOTAL IRELAND. | DUBLIN. | BELFAST. |
|---------------------------------|----------------|--------------|--------------|
| Cutlers and Scissors-makers ... | Males 86 | Males. 27 | Males. 19 |
| File-makers | 18 | 2 | 16 |
| Saw-makers | 34 | 13 | 12 |
| Tool-makers | 41 | 18 | 11 |

We must postpone the detailed consideration of the employment statistics of Sheffield to a later stage.¹

Among the causes of the rapid increase in the scope and importance of the cutlery industry in Sheffield in the latter half of the sixteenth century, tradition gives a high place to the influence of alien refugees who are said to have settled in the city and neighbourhood. The earliest account of this immigration is found in a communication to the *Sheffield Iris* newspaper of September 15, 1803. It is dated August 20th, and signed by "A Descendant of a Refugee."² The substance is as follows:

“In the time of Elizabeth great numbers of German and Dutch came over to England owing to persecution. Elizabeth appointed Commissioners to aid in their settlement. In Yorkshire, George, Sixth Earl of Shrewsbury, held the appointment. Numbers were settled as clothiers in various towns, such as Leeds, Halifax,

¹ See Chapter VI; also Appendixes III–VIII.

² Repeated with variations in *Sheffield Mercury*, October 3, 1818, and elsewhere.

Manchester, Norwich, and not a few found their way to Sheffield. To these the first question with the Earl was not *Can you make a knife?* but 'Can you make anything in the iron and steel way?' The sickle-makers were settled at Eckington, the scythe-makers at Norton, where their descendants remain chiefly at this day; the scissor-makers were established about Attercliffe,¹ and the razor and shear-makers, etc., in the town; and from the benevolent spirit of the Earl of Shrewsbury great numbers of refugees who were not manufacturers but possessed of property bought estates and settled upon them in the neighbourhood. As a further encouragement to trade, two men were engaged from Wales to erect and work a forge at Wadsley for making of iron, which was the first work of the kind in the neighbourhood since the reign of William the Conqueror. . . . The Act in favour of the Refugees gave them a settlement, but went no further, and it appears that the Earl or his Agent sat and bound and granted freedoms by his own right as Lord of Hallamshire, as his Father had done before, which may be seen in an old freedom yet in preservation in the Corporation chest. . . ."

Although local antiquarian research and investigations in official records have hitherto been unable to supply any specific contemporary corroboration, the above statement is so circumstantial that it cannot be lightly rejected, and deserves serious consideration. The immigration which followed on the religious cleavage of Europe at the Reformation came in a fairly steady stream from the reign of Henry VIII to that of Elizabeth, and culminated in the years 1569-72 in consequence of the savage repression of the Protestants by Alva in the Netherlands and the outbreaks of violence against the French Huguenots at the time of the massacre of St. Bartholomew. Silk, ribbon, and tapestry workers, glaziers, printers and bookbinders, makers of felt hats, gunners and armourers, settled under Henry VIII, some of these trades being new to the country. These were followed by other bands, but all such strangers were

¹ All these are villages adjacent to Sheffield.

dispersed and evicted by Mary, for a time at least. On the accession of Elizabeth many of the latter returned, and they were followed by a fresh immigration on a considerable scale from the Spanish Netherlands. A large number of Flemish and Walloon weavers settled about 1561-70 in Sandwich, Canterbury, Norwich, Colchester, and elsewhere, and numbers of French Huguenots thronged the towns on the South Coast. In 1616 the aliens in London represented 121 different trades,¹ many of them previously unknown to the city. Many provincial towns also received a band of settlers.

An enumeration of the aliens in and about London in 1563 gave a total of 4,534, of whom 2,860 had come before Elizabeth's reign. A similar count in 1581 showed 3,909 strangers, 1,149 belonging to the French Church and 1,364 to the Dutch.² In 1593 the number was 5,259, of whom a thousand were English and Scotch.³ The number in the provinces we do not know with precision, but probably it did not fall short of the above totals.

Now we have satisfactory evidence that amongst these strangers were included workers in the cutlery arts, and that in London at least that craft was augmented and strengthened by their advent. Thus the settlement of cutlers in Westminster, of whom we hear in 1566,⁴ apparently consisted of aliens. The London companies had authority over all strangers exercising their several crafts, and it is from the complaints of the London cutlers in 1615 we learn that these aliens were acting as importers as well as producers of

¹ S.P.D. Jas. I, lxxxviii. 113.

² Cunningham, "Aliens," 149 n.

³ Strype's Stow, 402.

⁴ S.P.D. Eliz., xiii. 36.

cutlery, and that they "do usually bring from beyond seas wares ready-made appertaining to the art of cutlery." It is said that "without the Liberty and suburbs they are grown to hundreds," and that they supplied ironmongers and merchants in addition to selling direct to the consumer.¹ From the proceedings instituted by the Alien Commission in 1621 we learn that there were then foreign cutlers residing in the City as well as in the suburbs and at Westminster. The names of twenty-seven French and Dutch cutlers in and near London and Westminster are preserved in one list, and a further batch are enumerated in another document; they were cited to appear before the Commissioners to give an account of themselves.² They are here described as "French" and "Dutch," but this leaves their origin uncertain. The "Dutch" were probably Flemings speaking a Teutonic dialect; but the "French" may also have come from the Netherlands, where the Walloons—many of whom came from the metal-working districts, such as Namur and Luxemburg—spoke a dialect of French.³ The cutlery industry of France was centred at this time chiefly in Paris, Langres, Châtellerault, and Thiers; in Flanders, whence most of the immigrants came, the cutlery towns were Liège, Namur, and probably Lierre, Aerschot, and Gembloux, in the last of which the remains of an ancient industry still linger.

Such were the workers, some of whom according to tradition found a home in and around Sheffield. The more recent versions of the story of their settlement give the year 1570 as the date of their arrival, and

¹ Leader, *loc. cit.*, i. 157.

² S.P.D. Jas. I, cxxviii. 46, 47.

³ Cunningham, "Aliens," 155.

ascribe to their advent and initiative the introduction of the manufacture of scythes, scissors, and sickles.¹ The particular claims made for the Sheffield settlers cannot be maintained unless their arrival was at an earlier date than that suggested, since Mr. Leader has had no difficulty in showing that the scythe and sickle industries at least were in existence in Sheffield several years before the persecutions of Alva.² The evidence of family names also yields a negative result; but this is to be expected in the case of illiterate workers, especially remembering the rapidity with which foreign names became anglicized, and the notorious indifference to orthography of those responsible for entries in Parish Registers. Moreover, contemporary legislation was definitely directed to the rapid absorption of such aliens, no stranger being allowed to take an alien apprentice or to have more than two alien journeymen.³ The only scraps of local evidence of a positive character that can be adduced are derived from industrial terminology and technique. Thus the term "gaine" is still sometimes in Sheffield used for part of the socket of a grindstone. Another French term—"pile"—is applied to the unmarked side of a knife-blade (cf. *pile et face*). Moreover, the word "couteau" was a familiar name among the workers down to the early nineteenth century.⁴

One further point may perhaps be suggested. The occupation of scythe-grinding has one peculiar and

¹ *Sheffield Local Register*, 1830. "Sheffield as it is," 1852. Holland, "Manufactures in Metal," 1833, ii. 51.

² Brit. Arch. Ass., 1908.

³ Cunningham, "Aliens," 165.

⁴ Cf. "Grinders' Statement of Prices for 1810."

significant characteristic, namely that the revolution of the stone is in the contrary direction to that found in all other branches of grinding work. In this case only does the upper surface of the stone revolve towards the grinder, though in Germany this is the direction adopted in all kinds of work. Whether this feature of the trade is due to foreign influence it is impossible to say, but it is curious to find in a picture of a grinder's family by Gerard Ter Borch, probably painted in Haarlem about 1635, called "The Grinder's Family," a representation of a scythe-grinder at work (lying over a stone which revolves towards him) somewhat in the Sheffield manner.¹

There was a considerable immigration of refugee cutlers a century after the epoch we have been considering, consisting of Frenchmen who fled to England for sanctuary after the revocation of the Edict of Nantes in 1685, when London and the seaport towns were inundated with refugees. These men so far as we know established themselves in London, where the ranks of the industry were considerably augmented.² Of their influence on the industry at Sheffield there is no definite trace. There was, however, a band of iron-workers from Liège employed in Sunderland in 1688 who introduced the art of making a special kind of nail and were esteemed as valuable workmen.³ And about this time there was established at Shotley Bridge, near Newcastle, a sword factory worked by aliens. These, however, came not from the Low Countries, but from Solingen, whence they introduced the art of making the famous sword cutlery of

¹ Berlin Gallery.

² Le Play, "Les Ouvriers Européens," 1855.

³ "Victoria County History of Durham," 281.

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Germany into England. These craftsmen also manufactured knives, and in 1787 erected a Cutlers' Hall, which is still standing. In 1828 the sword-blade manufacture was still carried on at Shotley Bridge by a descendant of the original immigrants. It has, however, long since vanished.¹

¹ "Victoria County History of Durham," 288-90.

CHAPTER V

THE RULE OF THE COMPANY

THE earliest ordinances of the Sheffield Cutlers which have survived are dated 24th June, 1565. They were devised by "the whole consent of the Cutler Makers of Knyffes, and the cutler occupation," within the Lordship of Hallamshire, and were prescribed to regulate the trade according to "the ancient customs and ordinances" thereof. Thus, as is further shown by the record of the grant of marks to makers of knives and of sickles in the previous year, this code of trade rules was the outcome of an earlier code which has not survived, and the craft must have been subject to definite regulations for the common good of its members long before this date.

At this time, and until the incorporation in 1624, the ordinances were sanctioned by the Earl of Shrewsbury, Lord of the Manor, and were enforced by his authority in the Court of Frank Pledge for the Manor of Sheffield, on information laid by twelve searchers appointed by the same authority. The chief provisions were as follows: two annual holidays, or periods of cessation of work, a fortnight in summer from August 15th, and four weeks in winter from Christmas Day; the restriction of

the entrance to the trade to those who had served a formal apprenticeship; a prohibition against hafting blades brought in by the chapmen, and against doing work for dagger-makers, the latter being, presumably, strangers to Hallamshire. The fines for infringement of the regulations, as well as a nominal rent for the privilege of striking an authorized mark, were paid to the Earl himself.

At a time when such industries as are here in question were probably precarious and intermittent, not only from the uncertainties of markets, but especially on account of the unreliable supply of water power for grinding, both in the drought of summer and in the winter frosts, it is remarkable to find the provision of a close time made one of the principal regulations. It has been suggested that these holidays, and the corresponding five weeks' pause at Christmas imposed on the London weavers,¹ were introduced for the sake of the workers' health and wellbeing. The ordinances were framed "for the better relief and commodytie of the poorer sorte," and the enforcement of compulsory holidays may perhaps be attributed in part to the desire of these poor craftsmen for a period of leisure and recreation, and a break in the continuity of their arduous life. This view gains some confirmation from the voluntary adoption by the scissor-smiths, in 1680, of three annual holidays of one week each at Easter, Whitsuntide, and Christmas, in order to check the physical disablement and bad workmanship resulting from excessive labour.² It is probable, however—although the normal custom at this time must have been pro-

¹ Brentano, "History and Development of Gilds," p. 67.

² Leader, "History of the Cutlers' Company," i. 63.

duction to meet an ascertained demand—that the desire to avoid over-production was the dominant motive. There is no hint of any holiday or customary celebration of an ancient festival at these periods, and the cutlers are bidden to “apply and work other hand labours” during the compulsory recess.

After twenty-five years’ experience fresh ordinances were adopted in 1590, which were markedly in advance of the old so far as the effective restriction of competition from outside was concerned, and also as regards the independence and autonomy of the trade, whose members are now described as the “Whole Fellowship and Company of Cutlers and Makers of Knives within the Lordship of Hallamshire.” In this code we find the summer holiday increased to four weeks corresponding to the break at Christmas-time. The apprenticeship qualification is re-enacted, and the employment of a youth as journeyman under twenty years of age is made conditional on the consent of the cutlers’ jury. As in the later Act of Incorporation, the period of pupilage was intended to last till the youth came of age, and this condition remained the rule of the trade as long as the custom of formal apprenticeship endured. Even to-day instances of its survival may be found in the rules of the workmen’s societies. In London the period of servitude was lengthened, in 1556, to the age of twenty-four years, chiefly as a remedy against hasty marriages.¹

The ordinances further forbid any cutler to strike a mark other than that assigned to him. Doubtless this regulation was intended to facilitate the supervision of products, and to secure the payment of the customary dues to the lord of the manor. Other

¹ Ashley, “Econ. Hist.,” Pt. ii. 175.

regulations jealously insisted on the guarantees of local workmanship; thus none but local blades might be hafted, and no unhafted blades might be sold to strangers. The onerous duty of supervising the trade and seeing to the punctual carrying out of the rules was, as before, placed on a special jury of twelve cutlers, who were to be appointed and sworn for this duty at the great Easter Court held by the Earl. The Court still retained the responsible authority for enforcing the penalties prescribed, and the whole of the fines were to be handed over to the Earl, with the single exception of half the fine of £5 which was payable by any who were granted the privilege of setting up in the trade without fulfilling the conditions with regard to apprenticeship.

The ordinances were again revised, after a corresponding interval, in 1614. Though this code has been lost, it is inferred from the record of penalties imposed under its authority that it included a new requisition penalizing the use of inferior metal, and henceforth the "making of knives without any steel in them" is heavily punished.¹ This same year, 1614, the operation of the ordinances was extended to some workers on the Derbyshire side of the town who were outside the confines of the "Lordship and Liberty of Hallamshire." These cutlers, from the villages near Chesterfield, to the number of seventeen, voluntarily threw in their lot with their fellow craftsmen, submitting themselves to their rules and regulations, and thus placing themselves under the jurisdiction of the Earl's Court.

The death of Gilbert, seventh Earl of Shrewsbury, in 1616, removed the last male of the family of

¹ Leader, *loc. cit.*, i. 12.

Talbot who owned Sheffield Castle and Manor, and with the passing of the property to absentee nobles, the close supervision which previous Lords of the Manor had exercised over the rising industry naturally fell into disuse. Thus the way was prepared for the creation of an independent and autonomous corporation of cutlery craftsmen. A Bill providing for incorporation had been introduced into the House of Commons in 1621,¹ but it was not until 1624 that the actual statute incorporating the Cutlers of Hallamshire became law. The statute is described as "An Act for the good order and government of the makers of Knives, Sickles, Shears, Scissors, and other Cutlery Wares in Hallamshire, in the County of York, and parts near adjoining." The scope of the Company's jurisdiction was defined as embracing the area known as "Hallamshire," together with a radius of six miles beyond; that is, an area including Sheffield and extending to a distance of from eight to twenty miles. The preamble sets forth the "reputation of great skill and dexterity in the said faculty" enjoyed by the craftsmen, who "have made knives of the best edge, wherewith they served the most partes of this Kingdome and other foreign countries." It points out the evils which have followed the relaxation of systematic supervision and discipline, and the injury done to the trade by ill-trained workmen and their "deceitful and unworkmanly wares." To remedy these defects it is ordained "that all persons using to make knives, blades, scissors, sheers, sickles, cutlery wares, and all other wares and manufactures made or wrought of iron and steel, dwelling or inhabiting within the said Lordship and Liberty of Hallamshire, or within six

¹ Leader, *loc. cit.*, i. 18.

miles compass of the same, be from henceforth and hereafter may be, in deed and in name, one body politic, perpetual and incorporate of one Master, two Wardens, six Searchers, and twenty-four Assistants, and Commonalty of the said company of cutlers." It will be noticed that not only is the area of jurisdiction definitely enlarged so as to comprehend a radius of six miles outside Hallamshire, but that a wide latitude is given to the forms of manufacture to be included within its scope: indeed, the definite inclusion of all manufactures of iron and steel is curiously prophetic of the situation of modern times, when cutlery has retroceded in importance in the City of Sheffield relatively to the heavy steel industry. Whereas, too, the earlier ordinances had referred only to cutlers and makers of knives, the manufacture of sickles, shears, and scissors is now definitely specified. The former had certainly been included under the older regulations, but of the two latter we have no earlier trace, and it is possible that their introduction may have been more recent. Razors are not yet mentioned nor previously heard of, but were probably produced in small quantity by the more dexterous makers of knives. The Act gives authority to the Company to make by-laws and to impose penalties for breach of them. By other provision the apprenticeship rule is carefully defined; the insistence on steel edges for knives is repeated; no master is to strike more than the one mark assigned to him; lastly, the fines are to be enforced and recoverable in the King's Courts instead of the Manor Court.

In the first code of by-laws, which were issued the following year, the Company assumes the powers

necessary for a detailed supervision of the trade. We miss the ancient provisions with regard to close time, instead of which we have merely a prohibition of work on Sundays and Holy Days. Only sterling silver and gold may be used for inlaying knife-handles, and may not be applied to articles of less value than 5s. a dozen. No one is to do any work for any "foreigners" or persons not free of the Company. A journeyman who is idle from want of work is to be paid his wages as usual, and conversely he is to be fined if he neglects his work.

The newly established Company now enjoyed a definite revenue from those fines and penalties which, when the trade was under the control of the Manor Court, had been paid to the Lord of the Manor. The fines for trade offences ranged from 2s. to 40s., but in practice they were often partially remitted. The fee for admission to the freedom and granting a mark was 3s. 4d., but was reduced to 2s. 6d. in the case of those who claimed the privilege prescriptively at the foundation of the Company. The fee for binding an apprentice was also 2s. 6d. The annual mark rent was now fixed at 2d. a year instead of 1d. as previously.¹

In the eighteenth century these payments were increased. Mark rent became 6d. a year. To the statutory fee of 2s. 6d. for enrolment of an apprentice was added an "assessment towards the fund for the necessary service and expenses of the Company" of 9s., as well as charges for parchment and for stamp duty. Similarly the charges on the admission of a freeman were raised by an addition of 4s. 8d. for searching and certifying the mark as well as stamp duty.

¹ *Leader, loc. cit.*, i. 60.

As the trade expanded in the first half of the seventeenth century, the task of enforcing proper supervision and discipline became increasingly difficult. The need for more stringent provisions for suppressing illegal and unworkmanly goods which thus arose is shown by the supplementary by-laws which were promulgated in 1662. No wares now were to be actually sold until they had been inspected by the searchers and approved as "good and workmanly made, tempered, and wrought." No one was to buy either hafts or blades from "foreigners" or to sell blades to them, under the severe penalty of £10 for each offence; and those who abetted the making of goods without steel edges were also to be punished. The penalty for abuse of marks was also increased under these by-laws to £10. In the increased penalties imposed we have a striking indication of the improved economic position of the workers. A by-law of 1690 extended the rule of the Company to file-smiths and awl-bladesmiths, by declaring these trades to be comprehended in the terms of the statute. The legality of this inclusion was, however, challenged a century later, and the file-smiths were able to defy the decrees of the Company with impunity, until by the Act of 1791 they were formally brought within the scope of its regulations.

In the year 1680 the Company inaugurated a commercial experiment of an interesting character.¹ In order to counteract the prevalent abuse of truck payments by the factors they established a storehouse, primarily for the use of scissor-smiths, in which the masters could deposit their finished goods while waiting for purchasers to appear. On such deposits

¹ Leader, *loc. cit.*, i. 161-4.

the storehouse made advances, partly in ready money and partly in materials at market prices. The scissor-smiths to the number of 148 undertook to work only for the storehouse, and not to "sell, vend, swap, or barter" their wares to any other person. A year later the value of goods in store amounted to £147, and they were being disposed of both locally and also in distant markets. The storehouse was a large purchaser of trade materials, such as iron, imported steel, boxwood, and so on. This enterprise was carried on with success for about eight years. A somewhat similar undertaking, though of a less satisfactory character—being principally concerned with the business of lending money to working masters—was conducted by the Cutlers' Company from 1734 until about the close of the century.

The first half of the eighteenth century was a period of rapid and accelerating expansion in the trade. By 1750 the rate at which boys were being apprenticed was more than four times as great as it had been at the beginning of the century; and in the later decades of the eighteenth century, in consequence of this development, the power of the officers to control the large population under their nominal supervision and to uphold the rigid restrictions on the entrance and practice of the trades became seriously weakened. Not that the Company resigned their rights or abdicated their responsibilities; it was a period of conflict, but also of activity. Thus by-laws were passed in 1750 which were designed chiefly to secure a larger revenue for the Company. Those enacted in 1772–3, on the other hand, reveal a desperate attempt to prevent the invasion of the trade by unqualified persons. A few

years later, in 1780, we find the Company legislating against the production of worthless wares made of cast iron in place of steel. The trend of events, however, inevitably tended to discredit the Company and to overthrow its jurisdiction ; and the final result of the widespread movement of criticism and revolt within the Company was an application to Parliament, and the passing of an Act in 1791, by which the incorporating statute of 1624 was superseded. By this Act the jurisdiction of the Company was extended over all "makers of knives, sickles, sheers, scissors, razors, files, and forks." The doors were thrown open to all actually engaged in the trades at the passing of the Act, but the qualifications for obtaining the freedom in the future were carefully defined and safeguarded. In one regulation only was there any relaxation of the fundamental condition of practical trade experience as the basis of membership. Once before—under the ordinances of 1590—admission could be purchased by an unqualified person for the sum of £2. The Act of 1624 had withheld its sanction from this innovation, but now, for a redemption fine of £20 and fees, any unqualified person might be admitted to the full privileges of the Company. This concession was, however, destined to be revoked once again in 1814.

After the close of the eighteenth century the Company, in spite of its struggles, was unable to control the exercise of the trade or to protect those who had gained their admission to the Company by the prescribed period of service from the competition of those who exercised the trade without formal qualification. The repeal of the restrictive clauses of the Act was therefore demanded, not only by the

merchants and others outside the Company's membership, but by also the leading masters themselves, and it was through the initiative of these latter that the Act of 1814¹ was finally obtained. By this Act the trade was thrown open to any one who cared to take out a mark, and both the apprenticeship qualification for journeymen and the restriction on the number of apprentices that might be taken by a single master were finally abolished. For seven years the whole activity of the Company was in suspense, and for some time its entire dissolution seemed imminent. In any case its main powers and authority had gone for good, and from this time forward the chief corporate activities of the trade must be sought, not in the doings of the Cutlers' Company, but rather in the trade unions, in the federations of trade societies, and in the sporadic associations of employers for trade purposes.

If we pause to look back on the period—more than a century and a half—during which the original Act of Incorporation governed the constitution of the Company, we notice two broad and inter-related influences at work, culminating in the later decades of the eighteenth century in a force which rendered the government of the trade on its traditional basis impossible. The first of these was the increasingly unrepresentative and oligarchical character of the controlling body of the Company, a condition of affairs which called forth organized protests from the main body of the freemen and ultimately aroused their strenuous opposition. The second was the gradual weakening and final breakdown of the old rules limiting and regulating the admission and training of

¹ 54 Geo. III, c. 119.

apprentices, and the consequent virtual abandonment of the effective control of the trade. With the growth of the trade and the increase of numbers employed, both of these tendencies made for the permanent and increasing alienation of the executive from the rank and file. They thus demand some further consideration.

According to the actual letter of the Act of 1624 the Company formally embraced all persons using the trade—the general body of the workers, other than the officers, being included under the name of the “Commonalty.” By the constitution set up, however, the officers alone had the right to nominate and appoint their successors, and the rank and file were thus excluded from any share in the government. Moreover, instead of being itself subject to the authority of the Lord of the Manor, as under the earlier ordinances, the executive became a perpetual self-appointed oligarchy. Although the pre-incorporation ordinances of 1565 and 1590 were nominally “agreed, ordained, and made” by the “whole consent” and by the “whole fellowship” of the cutlers, the searchers were elected, not by the workers, but by the Grand Jury of the Manorial Court, and there seems no reason to suppose that the commonalty had ever possessed a democratic franchise.¹ Yet such a body as the jury must have been thoroughly representative of the interests of the district, and at the same time free from any taint of aloofness or indifference to popular sentiment. More important still, it possessed the dignity and authority of an impartial public tribunal, as compared with which the power enjoyed

¹ Cf. Mr. Leader's phrase, “the ancient method of choice by the commonalty,” *loc. cit.*, i. 24.

by the master cutlers was autocratic and irresponsible. For, under the Act of Incorporation, although the commonalty had no control over the selection of the officers, the master cutler had magisterial authority to compel any worker in the trade to attend before him and his subordinates in answer to his summons. The worker's "house, shops, cellars, or warehouse" might at any time be entered without notice and searched by the officers appointed, and substantial fines might be exacted from those who ventured to resist.

Doubtless this system answered well enough when the trade was still on a small scale, and when the officers were necessarily in close contact with the rest of the workers. Indeed, an interesting indication of a desire to act in harmony with the commonalty is found in a rejected draft of the ordinances of 1625, which contains a by-law under which the officers were annually to render an account of their stewardship "unto such persons as by the greater part of the Company shall be appointed."¹ The revised by-law, however, confined this power of audit to the assistants, and thus excluded all outside supervision.

Before the close of the seventeenth century this spirit of exclusiveness had already become powerful, and is clearly manifested by the common designation of those who were not in office as "not of the Company."² Early in the eighteenth century murmurings of criticism and discontent become audible. In or about the year 1711 we hear that "the sworn officers of the Corporation look upon themselves to be the Company," though they ought to be accountable to the freemen, and a firm and forcible protest against the selfish mal-

¹ Leader, *loc. cit.*, i. 123 n.

² *E.g.* in 1675. *Ib.* i. 25.

administration of the executive, which was then made, shows how keenly the freemen felt the grievances resulting from the oligarchical rule of the officers. The funds, they allege, have been misemployed—not used, that is, “for the relief and benefit of the poor of the said Corporation” as by the Act was prescribed. The malcontents beg the officials, “as you have a plain law for your direction,” to make it “the rule of all your actions,” and so avoid trouble and scandal, and preserve unity among the members of the Company.¹ Intermittent conflict, and occasional successful resistance to the Company’s abuse of its powers with regard to fines and restrictions, are the omens which indicate the approach of the critical struggle between the Company and the freemen which came to a head during the period 1785–91. In the former year we find the freemen definitely organized and able to make a concerted attack upon the Company’s administration in the Court of King’s Bench, the prosecution being only suspended on the strength of a promise of reformation by the Company. Two years later the Freeman’s Committee was again actively agitating, collecting subscriptions for a renewal of the prosecution, and even seeking aid outside the trade, for they report that “they have met with the greatest encouragement among their friends at Manchester.”² The address of the Committee to their “Brother Freemen,” the institution of a regular meeting-night every month, and the Committee’s co-operation with similar meetings of the file-smiths, proves the existence of an association within the Company—though yet distinct from it—which was in its

¹ *Leader, loc. cit.*, i. 66.

² *Ib.* i. 81. Perhaps among file-makers there.

essence an anticipation of a trade union organization, and which, if we look back for a parallel, may be compared with the journeymen clubs of the fourteenth and fifteenth centuries previously alluded to.¹ In 1789 one of the freemen, a file-smith, demanded from the master cutler a statement of the Company's accounts, and, further, an undertaking that the Company would apply for an Act giving the power of electing the officers to the whole body of the freemen. These demands were refused; whereupon the Freemen's Committee forthwith submitted to Parliament a petition for the institution of a system of responsible government within the Company,² and took steps to promote a Bill to give effect to the desires of its supporters. The accumulation of the necessary funds—which must have been a formidable task, and have demanded an effort which is a good measure of the intensity of the popular antagonism to the Company—was effected by the help of subscriptions from individual freemen, and from the friendly societies or trade clubs (for the two are indistinguishable at this period), such as the Masons' Club, the Button-makers' Committee, the Union Society, the Taylors' Society, the File-smiths' Society.³ The Company on their side appealed to the "principal manufacturers of cutlery wares," and called several meetings of the "gentlemen, clergy, merchants, and principal inhabitants," showing that wealth and aristocracy were on their side. The freemen's Bill was not carried, but the following Session another petition was laid before Parliament definitely attribut-

¹ Above, pp. 9, 10.

² Journal of the House of Commons, vol. 44.

³ Leader, *loc. cit.*, i. 84.

ing the mismanagement of the Company's affairs to the obnoxious usage which permitted the officers to appoint their successors, and constituted them into a body representing "a separate and distinct interest, always independent of the whole body, and frequently adopting and countenancing measures for their own advantage at the expense of the freemen at large." Their Bill was again introduced and vehemently fought by the Company both in Sheffield and London. Finally, however, arbitration was agreed to, and a committee of five, including two representatives of each of the contending parties and an umpire, was appointed to draft a compromise Bill. This measure came before the House of Commons in 1791, and after further concessions to the freemen's claims was passed into law.

Though the freemen's agitation was responsible for the passage of the Act, they failed to obtain the insertion of any provision for the popular election of the officers. The only modification made in the mode of appointment was a regulation permitting the master manufacturers to meet once a year and nominate twenty-four persons who had not laboured as journeymen during the previous twelve months, of whom twelve were to be selected by the Company as assistants. The remaining twelve assistants, together with the Master, Wardens, and Searchers (and the whole of the assistants in default of such nominations), were to be appointed as heretofore. The concession thus made to the freemen's demands at first sight appeared to be a substantial one, and to afford an entrance into the charmed circle of the officers for a sufficient number of representatives of the trade at large. The agitators themselves

seem to have accepted this interpretation, since they celebrated their victory by holding a public dinner. Their satisfaction, however, was short-lived, and the advantage of the new provisions soon proved to be merely nominal. The reason for this unsatisfactory result lay in the fact that, by the settlement of the freemen's claims, a fresh line of cleavage was brought into prominence. It gradually became evident that the claims of the journeymen rather than those of the small masters lay at the root of the trouble. These journeymen were men who, while qualified to take out their freedom, were not in a position to set up for themselves as masters, and were therefore not anxious to avail themselves of the privileges of enrolment, but at the same time required the assistance of apprentices. The new provision, however, not only excluded from holding office the whole body of the journeymen, but allowed the Company to select from the nominees such men as were least likely to be troublesome. Thus in the election of 1791 those who had been prominent on the Freeman's Committee were carefully excluded, and the whole farce of procedure soon fell into disuse.¹

A fresh incarnation of the Freeman's Society took place in 1831-4, inspired by the same monthly meetings, and voicing the same demand for a share in the election of the officials and in the administration of the Company's affairs, and agitating for the re-establishment of compulsory legal apprenticeship—but all in vain. The working freemen or journeymen at this time formed nine-tenths of the whole trade. They had ceased to pay mark rent after 1814, and from this time forward are definitely identified

¹ Leader, *loc. cit.*, i. 88.

with the labouring as opposed to the employing interest in the trade, though retaining many of the traditional characteristics of the small master. Occasionally after this time the term "freeman" is used to indicate the quasi-independent piece-workers as distinguished from the journeymen or poorer class of datal workers, the former—but not the latter—being qualified for membership of a trade society.¹ Even this distinction, however, soon disappeared.

The struggle we have been considering was not an isolated controversy, nor one peculiar to the Sheffield trades. It was rather an exemplification of a general tendency towards the oligarchical usurpation by a small body of masters of the control of a whole corporation, such as had been a common feature in the development of guild organization, and which in London in particular was marked by the position occupied by the liveries in the various Companies.² For an illustration we need look no further than to the records of the Cutlers' Company of London. In this case the commonalty, who under the charter of 1422 had been empowered to elect the officers of the Company, were by the constitution established by James I (1607) deprived of this right, and, as was the case in Hallamshire, the officers themselves nominated persons to fill up vacancies in their number. Early in the seventeenth century there was an outbreak of rebellion by a body of unofficial freemen against the oligarchy in power, the chief grievance being the practice of admitting men who were not actually engaged in the trade. In 1606

¹ *E.g.*, *Sheffield Iris*, June 20, 1844; *Sheffield Independent*, November, 1853.

² Cf. Ashley, "Econ. Hist.," vol. I. pt. ii. 125.

these rebellious freemen petitioned the Lord Mayor and his Council for a new charter, on the ground that the principal men of the company had assumed the right to act in the name of the whole Company and had exceeded their jurisdiction.¹ The attempt of the insurrectionists, however, failed to bring about any permanent modification of the practices complained of, and the Company to an increasing extent became composed of men who were not cutlers at all. By 1884 only ten members of the Company were cutlers, out of a total membership of about 100.² At the time of the Commonwealth a similar democratic agitation had spread through many of the London Companies;³ and for a still earlier instance we may cite the controversy within the Goldsmiths' Company in 1529.⁴

If we seek a contemporaneous parallel for the Sheffield freemen's revolt, we may find it in the comparison of the constitution of the Cutlers' Company with that of the Frame-work Knitters.⁵ The members of the latter trade, which was originally established in London but eventually migrated to Nottingham, had formed themselves, early in the seventeenth century, into a trade association for regulating prices and enforcing apprenticeship. In 1657 they obtained a charter of incorporation from Cromwell, and, though this was voided at the Restoration, a fresh charter was granted by Charles II in 1663. By the terms of this deed the Company was to consist of one Master,

¹ Leader, *loc. cit.*, i. 24, 29. ² Livery Companies Commission.

³ Unwin, "Industrial Organization," 205-7.

⁴ *Ib.* 43.

⁵ Cf. Felkin, "History of Hosiery and Lace Manufactures," pp. 61-77.

two Wardens, and fifteen or more Assistants, who were to form a Court and had authority to make by-laws for the government of the whole society of the Art and Mystery of Frame-work Knitters, their jurisdiction being now extended over the whole kingdom. They were to test all goods, and such as were found to be "not workmanlike wrought, or of deceitful stuff" were to be cut in pieces. They had authority to levy fines, and to prevent the employment of persons who had not served a proper apprenticeship. They could, however, admit any person they thought fit to the freedom of the Company. Here too, as was the case with the cutlers, though the charter contemplated the inclusion in the Company of the whole "Fellowship" or "Society," the executive was constituted as a self-elective oligarchy, and vacancies in the ranks of the officers were filled by co-optation. The defeat of an attempt made by the Court in 1728 to enforce their by-laws on the workers at Nottingham led them to proceed, after a period of quiescence, to the issue of fresh regulations in 1745. These, however, were promptly repudiated and opposed by the body of working masters, and so harsh and autocratic were the powers claimed that they were even rejected, after due examination, by a Committee of the House of Commons, as contrary to reason and an undue interference with the liberty of British subjects.¹

Let us now turn to the second most significant feature of the Sheffield Company's rule—namely, the control of the admission to the trade. The regulation with regard to apprenticeship in the cutlers'

¹ Journal of the House of Commons, vol. xxvi. p. 593. Cf. Held, 485.

ordinances of 1565 prescribes the usual period of seven years' service under indentures, but makes the concession that a man who had been "sufficiently learned in the said occupation by his father" might set up for himself or work for hire as a journeyman. This relaxation was repeated in substance both in the ordinances of 1590 and in the Act of Incorporation, and suggests that the formal apprenticeship of son to father was never strictly enforced, being no doubt regarded as superfluous. The practice, indeed, finally received formal recognition in the Act of 1791, in which it was laid down that freemen's sons, instructed by their fathers in their own branch, were to be considered apprentices, although not formally bound. Two years before these regulations were originally made, the national Statute of Apprentices (5 Eliz. c. 4) had made the rule of seven years' service universally compulsory, though by subsequent judicial interpretation its scope was restricted to trades established when the Act became law, and its operation was limited to market towns.¹ Thus the Act did not apply, for instance, to trades such as that of the Frame-work Knitters, which sprang up later, nor to the trades of places like Manchester, Birmingham, and Wolverhampton.

In the cutlers' ordinances of 1590 we find a severe restriction imposed upon the number of apprentices, one lad only being allowed at a time to any master until he reached the last year of his apprenticeship, when a second might be taken. Similarly in Paris a master might bind only one apprentice at a time (statutes of 1565), as also in Solingen (ordinances of 1596). The Statute of Apprentices placed no

¹ "Wealth of Nations," Bk. I. ch. x. § ii.

limitation on the number of apprentices which could be bound to one master, except in the case of the cloth trades and in tailoring and shoemaking; even here the rule was liberal, merely insisting that one journeyman should be employed to every three apprentices.¹ In most cases the restriction of numbers was left to the ordinances of the individual crafts, though the Lancaster hatmakers were limited to two apprentices per master by special statute,² and in the case of silkweaving a similar limitation was imposed in 1773.³ In London a similar restriction had been imposed in 1556 by the Common Council upon a number of trades, including the cutlers' fraternity.⁴ In the case of the Sheffield cutlers it may well be doubted whether it was possible to enforce the rule. The provision made in 1590 for admitting workers without legal qualifications on payment of a fine of £5:5 the fact that prominent masters, such as the foreman of the first cutlers' jury, were fined for infringing the rule: the complaint made in the preamble of the Act of 1624 that the workmen "have taken liberty to themselves" to take as many apprentices and for such periods as they think fit: the fact that more than half of those who claimed admission to the Company at its foundation were without the qualification of previous service—all these afford abundant evidence of the ineffectiveness of the restriction. By the Act of Incorporation a slight relaxation was made in the rule, allowing a second apprentice to be taken when the first was in his fifth instead of his sixth year of service. This, however, can hardly have

¹ Ashley, "History," ii. 94.

² 8 Eliz. c. 2.

³ 15 Geo. III, c. 68. Held, 416, 444.

⁴ Ashley, *ib.* ii. 176.

⁵ Ordinances, clause 11.

made an appreciable difference, and the new rule was promptly infringed not only by obscure cutlers but by such prominent members as the second, third, ninth, and twelfth occupants of the dignified office of Master Cutler.¹ Probably the penalty incurred was insufficient to render the practice unremunerative.

The restriction of the entrance of the trade was further weakened by the provisions of the Poor Law, under which parish boys were apprenticed to householders. By the statute of 1601 (43 Eliz. c. 2) the churchwardens and overseers were empowered to bind as apprentices those poor children whose parents were unable to maintain them, "till such man-child shall come to the age of four-and-twenty years, and such woman-child to the age of one-and-twenty years or the time of her marriage." Funds were provided by private philanthropy for the purpose of paying a premium to the master and launching the child on his career.² The cutler, however, who had a second apprentice bound to him by the churchwardens and overseers with the consent of two justices of the peace, found himself on the horns of a dilemma, since by the Company's rules he might not employ the boy at his trade. Such at least was the view of the law according to a counsel's opinion given in 1652.³ In these circumstances the simplest and most profitable course was for the cutler to ignore the Company's rule and to take shelter under the provisions of the statute law, since the obligation to receive the boy, even if it were unwelcome, could only be obviated by payment of a premium to transfer him elsewhere. If, however, the boy was accepted and taught the trade, the Com-

¹ *Leader*, i. 38.

² See 7 Jas. I, c. 3, 1609.

³ MS. in possession of Mr. Thomas Turner.

pany was not in any way bound to recognize him as qualified for the freedom, and his master could reap the benefit of his skill at low wages.

At first the number of such apprentices was small, and little use was made of the provision. A doubt whether the persons to whom children were assigned could be compelled to receive them is stated by the Poor Law Act of 1696¹ as the reason why "the law had failed of its due execution"; accordingly the obligation was put beyond question, and a penalty of £10 imposed for refusal to comply. This seems to have led to a more general use of the power, and complaints are heard of the excessive number of apprentices taken by poor cutlers "for love of a little present money in hand."² Indeed, the less prosperous cutlers often found themselves unable to support these boys, with the result that in numerous cases the indentures had to be cancelled and the lad turned over to another master. So great was the influx not only of parish apprentices but of other boys as well, that in 1711 the officials of the Company, bewailing the undue multiplication of workmen and the depression in the price of their wares, predicted the "total sinking and utter ruin" of the Company, and threatened to impose a fee of £5 on all boys brought into the trade from outside.³

Their pessimistic forecasts were, however, falsified by the prosperity which came with the rapid expansion of the trade, and during the fierce disputes between the officers and the freemen in 1785-91 it is the former who are found urging the need of a more liberal system of admission, and the latter who would

¹ 8 and 9 Wm. III, c. 30.

² Leader, *loc. cit.*, i. 67.

³ *Ib.* i. 68.

insist on adherence to the old restrictions; the Company, as representing the interests of the larger masters, anxious for a freer labour market, wished to throw down the barriers, while the workers saw their interest in a strict limitation of the admissions. The attitude of the Company on this occasion recalls their action forty years earlier, when they had taken the somewhat extreme step of soliciting the settlement of alien craftsmen in Sheffield, a step which indicates both the prevailing scarcity of labour and also the general desire to improve the technical efficiency of the trade.¹ The revolting freemen complained in 1785 that as many as six apprentices were allowed to a master at one time, and that apprentices had been bound to journeymen—the latter, however, being a practice which both parties seemed to have favoured two years later, and which must have been extended steadily after that time. The Company on their side, while admitting as a matter of fact that “not a few masters had, at the same time, many apprentices who had not served even one year,”² were prepared to justify their more liberal policy, pleading increased demand at home and abroad, and scarcity of workmen, and claiming that the indulgence had had the beneficial effect of preventing an immoderate rise of wages—a good workman, as it was, being able to earn from 10s. to 20s. per week. Accordingly, the prohibition against the use of untrained labour was repealed so far as the scythe-smiths’ trade was concerned,³ and under the Act of 1791 members were permitted to bind, without restrictions as to number, their own sons, or the sons of other freemen, or parish

¹ See *Leader*, ii. 408.

² *Ib.* i. 67.

³ *Ib.* ii. 88.

apprentices ; failing these, a second apprentice might be bound when the first had served three years, and additional boys on payment of a fee of £5 each.

The term of servitude for parish apprentices had been reduced in 1778 to the age limit for other youths—namely, twenty-one years,¹ and the inducement which previously attached to their service under indentures up to twenty-four years of age was removed. That the practice was attended with serious difficulties may be judged from the copious legislation found necessary to regulate it. In particular, the Poor Law Act of 1792² makes the admission that many persons had been forced to take “a greater number of parish apprentices than it was convenient for them to maintain or employ.” The anomaly of their commonly illegal status in the cutlery trades was only finally disposed of in 1801, when the Act amending the Cutlers Act of 1791 granted them a statutory right to their freedom in the Company at the conclusion of their service.³

The year 1814 brings us to the close of the period of compulsory legal apprenticeship in the trade. Its abolition was strenuously opposed by the working freemen,⁴ but was supported by most of the masters as the best method of counteracting the power of the now strongly organized trade union movement. Some of the larger employers were, however, hostile, since they feared that the little masters, by employing large numbers of boys, would be able to undersell those who had to pay full rates to qualified journeymen.⁵ The preamble of the Act⁶ which repeals the ancient pro-

¹ 18 Geo. III, c. 47.

² 32 Geo. III, c. 57.

³ 41 Geo. III, c. 97.

⁴ See *Sheffield Iris*, April 12, 1814.

⁵ T. A. Ward, “Diary,” 217.

⁶ 54 Geo. III, c. 119.

visions justifies the step on the ground that the manufacturers have been "wholly dependent for the supply of journeymen and workmen upon the freemen of the Corporation, and by means of the said restrictions the number of journeymen is always very limited." In a sweeping clause, therefore, it is enacted that "any person may carry on or work in the incorporated trades though not a freeman, and may have as many apprentices as he likes, and for such term as he may think proper." The passing of this Act coincided with the abolition¹ of the general compulsory apprenticeship regulations of the great Elizabethan statute, but "the ancient customs, usages, privileges or franchises of the City of London" and the by-laws of all legal trade corporations were expressly excluded from this repeal. The compulsory apprenticeship of parish apprentices likewise continued effective until abolished in 1844.²

The events we have reviewed were characteristic of the industrial upheaval of the eighteenth century and the disintegration of the older methods of trade regulation. Instances of a similar breakdown of apprenticeship rules are common throughout that century, and especially towards its close. In the case of the London framework-knitters the agitation against the excessive number of apprentices culminated in 1710 in serious riots and frame-breaking outrages similar to the Luddite disturbances of a century later, and was the immediate cause of the migration of one master to Nottingham, where he established the trade and escaped the obnoxious restrictions, himself employing forty-nine boys, many of whom were parish

¹ By 54 Geo. III, c. 96.

² By 7 and 8 Vict., c. 101.

apprentices.¹ Their charter empowered the officers of the framework-knitters to enforce the statute of apprentices, and to insist on seven years' apprenticeship "according to the custom of London," but their failure to justify their jurisdiction in 1728 led to a virtual abandonment of any restriction on the number of apprentices, and was followed by an extraordinary influx of parish boys. Thus one master hosier who kept twenty-five apprentices at work was never known to employ a qualified journeyman.² Other instances of the same tendency may be found in the vain struggles of the little master hatmakers of Lancaster in 1777 to prevent the larger employers from abolishing the rule limiting the number of apprentices,³ and in the unchecked employment of apprentices in the textile industry towards the close of the century, especially in the case of the calico-printers.⁴

To return to the Sheffield cutlers. The presence of a class of adult labour, unqualified by legal servitude for membership of the Company, was the natural result of the failure to carry out the apprenticeship regulations as above described. The existence of such a class of illegal workmen and "foreigners" in the cutlery trade is indeed made patent in the terms of nearly every code of ordinances or by-laws, and the aim of both the chief statutes of incorporation—1624 and 1791—was to bring all such persons under the control of the Company, and to prevent the growth of a similar class in future. In 1772 a special by-law was aimed at the practice, then becoming common, of taking into partnership "resi-

¹ Felkin, ch. xvi.

² *Ib.* 75.

³ Held, *loc. cit.*, 416.

⁴ Cunningham, "English History and Commerce" (1903), 640. Brentano, "Gilds," 121.

dent foreigners " and "non-freemen," who "by advancing capital carry on great business." A knowledge of merchanting and the command of commercial capital were in fact becoming as important practical qualifications for the masters of the larger businesses as was the manual skill and technical knowledge acquired by apprenticeship; yet even in 1801 the freedom was confined to those who had been employed in the actual manufacture, and warehousemen, clerks, and the partners of freemen were specifically excluded. The Company's reply to the complaints made in 1785 that foreigners were permitted to employ members of the Company, and *vice versa*, went so far as to justify these dealings as resulting in the introduction of additional work, which the freemen, on account of its excellence, could not or, by reason of its laborious character, would not perform. Often, however, it was the poorer class of workers, whose practical experience had been acquired without official recognition, who formed the stumbling-block. The Company found itself indeed in a serious dilemma. Its fundamental principle was insistence on the legal apprenticeship; but it was essential to its retaining any kind of authority or control that all those actually engaged should be its recognized members. Accordingly by the Act of 1791 it offered the privilege of enrolment to all those workmen who, while legally unqualified, were nevertheless actually engaged in the trade at the time of its passing. The response to this invitation involved the admission in a single year of 1,346 freemen.¹ The jurisdiction of the Company was now, however, too ineffective to prevent the recurrence of the evil, and the defiance of regulations was attempted

¹ Leader, *loc. cit.*, i. 89.

with success and impunity at the opening of the new century. It may, indeed, be supposed that those responsible for the Company throughout this period were only too anxious to avoid any restriction of the labour supply, and the complaints of those who had conformed with the regulations, only to find themselves confronted with untrammelled competitors, failed to stimulate the officials to any effective action.

The true significance of the change that was taking place in the composition of the Company may be further brought out by a study of the status of the freemen. There was no legal recognition of the status of the journeymen as a class, nor have we any trace of the official regulation of their wages. The Act of Incorporation indicates that most of the workers were poor men, employed on "daily labour as workmen to the said cutlers," but any man who had duly served his time as apprentice was qualified for admission to the freedom if he so desired. The privileges conferred by enrolment as a freeman were the right of the freeman to set up as a master, to strike his own mark, and to take apprentices; but to be a master a man had to satisfy an important requirement—he had to be "the owner of his work himself." Now, the agitation of 1785–9, while conducted in the name of the freemen—that is, the independent masters—really embraced two divergent elements whose incompatibility was not as yet fully manifest. These were the old-fashioned freeman interest and the newer class of lifelong journeymen. The working freeman stood midway between the substantial employer or merchant on the one hand and the journeyman on the other hand, but his

interests were beginning to approximate to those of the latter rather than those of the former. Thus in 1785 the Freeman's Committee was agitating against allowing journeymen to bind apprentices, but in 1787 and subsequently it was in favour of that relaxation. In 1711 the revolting freemen had been led by prominent masters who were past officers of the Company; in 1789 the impetus was largely derived from the malcontents among the journeyman class. The fact is that, with the appearance of a new type of master in the second half of the eighteenth century, the distinction between freeman and journeyman was gradually losing its significance, and the phrases "working-freeman" or "journeyman-freeman" were often used to describe the main body of the Company's members. Indeed, the Act of 1791 specifically put an end to whatever difference might still be implied by the terms "journeyman" and "freeman" by stipulating that no person might work as a journeyman until he had taken out his freedom in the Company. When these men were celebrating the passage of the Act we find them referred to as "master manufacturers," and the term "master," which continued to be applied to the independent journeyman, was justified by the independence of their status as well as by traditional usage. From this time onwards the workers, as owners of their tools and as tenants of their workshops, no less than as responsible for the boys apprenticed to them instead of to the larger employers, continued the traditions of their predecessors, the independent freemen, though usually they were no longer in the strict sense the owners of their work themselves.

After the passage of the Act of 1814 absolute

freedom in the pursuit of the incorporated trades was secured to all comers, and the Company had no longer any direct authority over trade organization. Loyalty to an inherited tradition among the sons of the free-men and the prestige naturally attaching to so ancient an institution alone kept the membership of the Company alive. It was a period of dignified stagnation, distinguished chiefly by the erection of a new hall in 1830-2 and by the increasing importance of the annual feast. Still, the succession of officers was maintained—their duties now being little more than nominal—and the Company was able to maintain a kind of traditional respectability. By the middle of the century, however, when the growth of the heavy steel trade threatened to challenge the title of the Company to represent the chief industrial interests of the town, the enlargement of its membership so as to embrace the newer industries became imperative. Accordingly in 1860 an Act was obtained¹ extending the qualification for admission so as to include trades hitherto excluded. In addition to makers of knives, sickles, scissors, and shears as originally incorporated, and the scythe-smiths, file-smiths, and awl-bladesmiths subsequently recognized, the door was now opened to the saw trade, the edge-tool makers, and all other trades producing articles with a cutting edge; but most important of all was the provision by which the steel trade, the provider of the essential materials for many of the crafts and one of the most substantial trades of the locality, was now recognized, and its members made eligible for admission to the governing body of the Company. Persons engaged in these occupations were to be admitted

¹ 23 Vict. c. 43.

to the freedom of the Company on payment of £20 in addition to the ordinary fees for other members. Thus the Company was strengthened, its dignity was enhanced, and an ample choice of representative men to fill its offices was ensured.

Hitherto we have been concerned with the exercise of the Company's power and authority in relation to the body of working cutlers. We must now review those attempts to repress false wares which have more and more become the focus of the Company's activities since the breakdown of its jurisdiction over illegal workers. The insistence on the use of steel for the cutting edge is, as we have seen, a regulation which dates back to the pre-incorporation period, and evidence of occasional attempts to palm off inferior metal are met with throughout the Company's history. In the second half of the eighteenth century, however, these frauds appear to have assumed greater proportions. Thus, for example, the prohibition of the manufacture of table-forks from cast-iron instead of steel, which was attempted by the by-law of 1780, points to a fraud which caused no little trouble at that time and in the succeeding generation. These brittle goods, which had no durability, could yet be turned out so successfully as to imitate forged steel. Prohibition was not likely to succeed as a remedy, however, as long as there was a market for such goods, whether fraudulent or otherwise, and while many of the best houses in the trade were engaged in their production.¹ A wiser course was adopted in 1819 under a general "Act to Regulate the Cutlery Trade in England,"² which was not apparently promoted by the Sheffield cutlers. By this Act the

¹ See T. A. Ward, "Diary," 1818.

² 59 Geo. III, c. 7.

device of a hammer might be used to distinguish forged articles from those that were cast, and it was made penal to mark on cutlery wares words denoting a false description of their quality. This statute was made the ground of numerous prosecutions in Sheffield, and it seems to have had a wholesome influence at the time. Indeed, the imposition of severe and exemplary penalties on leading manufacturers at the instance of the Cutlers' Company a generation later shows that the Act continued to afford an adequate remedy for these abuses.¹

The chief industrial function which the Company retained after the general demolition of its powers in 1814 was the supervision of the use of trade marks. Under that Act any person, whether freeman or not, could have a mark assigned to him on payment of £2 plus stamp duty. Such marks had been employed from the dawn of the industry as the guarantee of quality and the proof of authorship. To the officials it was the means by which goods could be identified and responsibility located, and without which supervision would have been impossible. To the consumer it has become the main evidence of quality, the criterion on which he must place implicit reliance, since only technical expertness could enable him to distinguish one grade of quality from another. Like the purchaser of a patent medicine, he must base his judgment on the indication of popular repute and the testimony of practical experience. Hence to both parties the protection of marks from fraudulent abuse has always been a matter of the first importance, and this has been further emphasized by the growth of

¹ *Sheffield Iris*, August 12, 1843. For later history of the Cast Iron controversy see below, Ch. XIII. § ii.

markets and the consequent vast increase in the value of a well-known mark as a commercial asset. It is thus not surprising that the greatest care and vigilance was found necessary to ensure the proper supervision of marks, nor that the penalties for counterfeiting a mark had risen from 10s. in 1590 to £20 in 1791 and 1814. Nevertheless the inadequacy of the Company's supervision as a security against infringement was so clearly realized that in 1791 a "Society for the Preservation of Marks" was established among the masters, which undertook, in return for a membership fee of sixpence per month, to bear the cost of invoking the effectual protection of the law on behalf of any member whose property in his mark was imperilled through piracy.¹ Under the Act of 1624 any goods were liable to seizure and confiscation unless properly marked, and this must have been an effective remedy against abuse, so long as the "searching" was efficiently carried out. As long as the Act of 1624 was in force no master might legally strike more than one mark, but in 1791 the provision was allowed to lapse. Even before this time the practice of striking the customer's name or mark instead of the maker's had become common, and especially was this the case with goods supplied to London traders. The Company, however, adhered to the principle that no master could claim a right to the use of more than one mark to designate his own goods unless he had become entitled to the second mark by legal inheritance or succession. An agitation against the striking of customers' names in 1823-4 stimulated the Company to propose legislation for the suppression of the practice. The masters, however, were far from unanimous, and

¹ *Sheffield Advertiser*, July 8, 1791.

the London traders were hostile. The custom was too well established even then to be eradicated, and, in spite of the intermittent controversy to which it has given rise, its continuance has never been seriously menaced.

In the eighteenth century both place names and family names were commonly recognized as marks. Names of cities, such as "Paris," "Berlin," "York," and "Sarum," were frequently employed. Even "London" was freely used and appears in many forms. Family names were equally common and equally liable to mislead. The inconvenience, in fact, became so pronounced that in 1773 their use was forbidden,¹ a prohibition which was repeated in the Act of 1791. In the years 1791–1814 numbers were issued as marks, being registered serially up to the figure 3,694. In 1819 protection was at length given to the name of "London" by the stringent prohibition of its use as a mark upon cutlery goods manufactured elsewhere.² No similar protection has ever been extended to the name "Sheffield," and the piratical use of the word, especially in Germany and France, has been a source of endless annoyance and loss to the Sheffield trade. Being a place name and a proper name, it could not and cannot be registered as a private trade-mark; not being a trade-mark, it could not be protected by registration either in France or Germany. The only remedy has been prosecutions for false indication of origin, a cumbrous and unsatisfactory method of checking the abuse. Nothing but cordial international

¹ Leader, *loc. cit.*, i. 111.

² 59 Geo. III, c. 7. Compare the piracy of the London cutlers' corporate mark—the dagger—in the seventeenth century. See above, p. 97.

co-operation and stringent legislation could deal with the matter effectively. Not even by the prohibition in the Customs Consolidation Act of 1872, forbidding the importation of goods bearing marks implying manufacture in the United Kingdom, had adequate protection been secured against invasion of the home market itself by these illegal wares : how much more difficult to exclude them from neutral markets in other lands ! It was, indeed, the regular practice, with some German and French cutlery houses, to mark their products as of Sheffield manufacture, and this nefarious custom gave rise to perpetual friction as well as to serious injury to trade.¹ In 1887, in consequence of the scandal over the importation of goods bearing the British trade-marks—often destined for exportation to colonial and other markets as British goods—an agitation, in which the Sheffield manufacturers and the Company played a prominent part, resulted in the passing of an Act to discourage false marking. By this measure the frauds complained of have been restricted, but the trouble has by no means been finally disposed of, and much costly litigation has been required to restrain the counterfeiting of valuable Sheffield trade-marks by continental manufacturers. Occasionally a conviction has been obtained in a foreign court,² but the results of such prosecutions can never be commensurate with the injury suffered by the prevalence of these abuses, and the only security lies in co-operation and unremitting vigilance on the part

¹ See H. of C. Select Committee on Merchandise Marks Act of 1862 (1883), Qu. 1865, 6. Also Royal Commission on Depression of Trade, Second Report (C. 4715 of 1886); Part I, Qu. 2963 Part II, pp. 161, 172.

² See, for example, *Sheffield Independent*, April 9, 1909.

of the trade. The Cutlers' Company has spent large sums in contesting these cases in the United States, Canada, Egypt, and Germany, and in recent years a formidable fighting fund has been subscribed by the manufacturers of Sheffield for this purpose.

A new era of power and influence was opened to the Company in 1875, when, under the Act for the compulsory registration of trade-marks, it was created the official registration authority for Hallamshire and for the trades under its control. This privilege of local autonomy was conceded to no other trade centre, in spite of the envious claims to similar treatment made by cities like Manchester and Glasgow. Under the Patents, Designs and Trade Marks Act of 1883 the jurisdiction of the Company as a registry authority for the locality was ratified and extended.

Since this time the Company has enjoyed a unique and important position as a high authority on the difficult problems connected with trade-mark administration. It has also continuously exerted itself as the vigilant guardian of the marks owned by the manufacturers of cutlery and other goods in Sheffield, often securing convictions for abuses at home and abroad, which, without its help, could hardly have been attained by the owners whose rights were infringed.

In this way, while the ancient powers of direct control of trade organization have vanished, the Company has found a position and a function which is not only dignified and authoritative but of high industrial importance.

CHAPTER VI

THE WORKERS OF HALLAMSHIRE: THEIR NUMBERS AND STANDARD OF COMFORT

“ Varry weel, varry weel ; sailor lads, hearts of oak,
Cutlers’ lads, hearts of steel.”

THE CUTLERS’ SONG (c. 1780).

At the time when the cutlery trades were incorporated, the town of Sheffield, lying remote from the main highways of the country at the foot of great moorland hills, and surrounded by forests of stately trees, was hardly a place of first-rate importance, but shared the obscurity—relatively to towns such as Lancaster, Coventry, Warwick, York, Richmond, and Hull¹—of many places like Manchester, Birmingham, and Liverpool, which are to-day hives of industry.

According to an enumeration in 1615, the township of Sheffield contained 2,207 persons,² a figure which does not include the scattered industrial population on the outskirts of the village and throughout the area of Hallamshire. The registers of the parish church of Sheffield, which represent this wider population, contain the record of 4,609 baptisms and 3,715 burials during the forty years 1561–1600.³ We may thus

¹ Speed’s maps, 1610–32, give plans of all the latter towns.

² *Sheffield Register*, July 7, 1787.

³ Aiken, “Description of the Country round Manchester” (1795).

assume with fair confidence that the population of the whole area was at the end of this period in the neighbourhood of three thousand persons. This number had undoubtedly grown during the previous half-century, and according to the testimony of the then Earl of Shrewsbury included great numbers of handicraftsmen. The demand for agricultural supplies was so great that in 1608 dairy produce was sought as far afield as the remote Peakland town of Ashbourne.¹ These humble craftsmen formed the chief element in the social composition of the community, and there was no considerable agricultural population in the locality. The furnaces and forges, the grinding-wheels and dams, were all the property of the Earl of Shrewsbury, the former being also worked by him, while the grinding-wheels were leased to the craftsmen. Moreover, the great extent of the various enclosed properties of the Earl—which were largely devoted to sport—makes it improbable that, apart from his own family and retinue at the Castle, there were any families of wealth and position in the neighbourhood; and, indeed, only one family was recorded in Sheffield in the heraldic visitation of 1612.

In the Sheffield of this period there were no considerable merchants, and very few professional men, while among the cutlers we should not expect to find opulence. Still, the return of 1615 hardly indicates the degree of prosperity we might have anticipated from the industrial reputation of the town. The township contained, as we have seen, 2,207 people. Of the hundred most substantial burghers, who are described as being only “poor artificers,” there are said to be not above ten who have land enough to

¹ Hunter, “Hallamshire,” 100.

keep a cow. Of the rest, the greater part are "such as live on small wages, and have to work sore to provide them necessaries," while the number of begging poor is one-third of the total. The position of the cutlers was inferior to that of other townspeople, as is shown by the smallness of their subscriptions to the building of a Cutlers' Hall in 1638, as compared with the contributions of persons outside the trade.¹

Indeed, the wealth and social position of the cutlers continued to be inferior to that of the ironmasters and professional men who became prominent after the death of the seventh Earl of Shrewsbury in 1616 and the removal of his family. We find, for example, that only one cutler of the position of "gentleman" is included among those who were assessed to the poll tax of 1692.² The reason for this is that the wealth of the leading families of Sheffield in the seventeenth and eighteenth centuries was not derived from the cutlery trades, but from the furnaces and forges which supplied the raw material, the capitalistic character of these enterprises being in sharp contrast to the modest economic status of the cutlery business.³ Under these circumstances it is all the more pleasant to find that the sons of representative cutlers were making their appearance at the Universities from time to time throughout this period.⁴

¹ Leader, "History of the Cutlers' Company," ii. 99.

² Tucker, "Descent of the Manor."

³ Hunter's "Hallamshire," ch. viii.; Gatty, "Sheffield Past and Present," 181.

⁴ The admissions to Caius College, Cambridge, contain the name of Richard, son of Thomas Mallar, of Ecclesfield, cutler, in 1614. The register of St. John's College, Cambridge, contains the following names, all the sons of Sheffield cutlers: 1648, John,

By 1700 the population of Sheffield must have been from five to six thousand, though Macaulay puts the figures at only 4,000 in 1685. Using the best available computations, but ignoring the exaggerated estimate of 20,000 suggested by Defoe (*c.* 1725), we may estimate the inhabitants of the township and parish respectively as follows:¹

POPULATION OF SHEFFIELD IN THE EIGHTEENTH CENTURY.

| Year. | | Township. | Parish. |
|-------|--------|-----------|---------|
| 1700 | ... .. | 5,000 | 6,000 |
| 1725 | ... .. | 8,000 | 10,000 |
| 1750 | ... .. | 12,000 | 20,000 |
| 1775 | ... .. | 20,000 | 32,000 |
| 1801 | ... .. | 31,000 | 46,000 |

These are small populations, but we must remember that when Defoe wrote Manchester was only "one of the largest villages in England," whereas Devon was "a county full of large towns," and that on the other hand, even in 1770, when Sheffield closely approximated in size to Liverpool, Manchester, and Birmingham, it was only half as populous as Norwich and one-third as large as Bristol.²

The growth of the City of Sheffield since 1801 is shown by the Census enumerations. It is interesting to note that the increase during the first half of the century was at a slower rate than that of Birmingham and Manchester, but that in the last fifty years it has been more rapid.

s. John Crooke; 1655, Malim, s. Malim Sorsby; 1690, Seth, s. William Ellis; 1690, Thomas, s. Joshua Scargill; 1701, William, s. William Steer; 1714, Joseph, s. John Downes; 1718, Charles, s. William Steer; 1724, William, s. Thomas Ellys; 1728, William, s. John Guest; 1748, John, s. George Smith. Doubtless, a search through the registers of other Colleges would proportionately augment this list.

¹ Cf. Aiken, Goodwin, Shore, Macpherson, A. Young, J. Holland, G. C. Holland, *Census* (1801).

² Macpherson, "Annals," iii. 323.

POPULATION OF SHEFFIELD IN THE NINETEENTH CENTURY.

| Year. | | Population. | Increase per Cent. in Intercensal Period. |
|-------|--------|----------------------|--|
| 1801 | ... .. | 46,000 ¹ | — |
| 1811 | ... .. | 53,000 ¹ | 16·4 |
| 1821 | ... .. | 65,000 ¹ | 22·2 |
| 1831 | ... .. | 92,000 ¹ | 40·7 |
| 1841 | ... .. | 111,000 ¹ | 20·8 |
| 1851 | ... .. | 135,000 ¹ | 22·1 |
| 1861 | ... .. | 185,000 ¹ | 36·9 |
| 1871 | ... .. | 240,000 ¹ | 29·6 |
| 1881 | ... .. | 284,000 ¹ | 18·6 |
| 1891 | ... .. | 324,000 ¹ | 14·0 |
| 1901 | ... .. | 409,000 ² | 26·0 |
| 1911 | ... .. | 455,000 ² | 11·2 |

The expansion of the population of Sheffield serves as a rough index of the growth of the cutlery industry down to the middle of the nineteenth century, and brings out very clearly the startling increase which took place between 1815 and 1830. Since 1850, however, the guidance of these figures cannot be accepted, for the development since that time has been principally due to other industries. In particular the heavy steel and engineering trades have advanced so rapidly that they can now successfully challenge the claim of the cutlery trade to be regarded as the staple industry of the city, since in point both of numbers employed and of capital invested they rival the importance of the older crafts. In 1901, while the cutlery, file, saw and edge-tool trades together gave employment to 23,935 persons of both sexes, the iron, steel, and engineering trades employed 23,155 men. In addition to this pre-eminent group, other trades have expanded faster than cutlery; for example, the white metal, electroplate, pewter, and gold and silver trades, which employed 5,000 men and 4,000 women in 1901.

The actual state of employment in the cutlery trades at different periods may be traced with some exacti-

¹ Uniform area.² City extended, 1901.

tude by means of contemporary data derived from the records of the Cutlers' Company and other more modern sources. Let us first consider the occupational demand at the time when the Company was established. Harrison's "Survey of the Manor" in 1637 speaks of "four hundred master workmen occupied in grinding" in about thirty water-driven wheels, the Earl's rent-roll showing 28 wheels in 1604 and 32 in 1624. Since grinding was not generally carried on as a distinct occupation, these artificers, with their journeymen and apprentices, must have constituted the main body of workers, and we may thus assume that the number of adult workers in the trade at the time of incorporation was about seven hundred. The Company's records show that 498 masters claimed admission on the ground of having been occupied in the trade prior to the date of incorporation. Of these 440 were knife-makers, 31 were makers of sickles and shears, and 27 were scissors-makers. The total number of freemen whose marks were registered between 1624 and 1679 was 1,982, including 1,562 knife-makers, 136 shear-smiths, and 284 scissors-smiths. We may then suppose that at the middle of the century there were eight hundred full masters and perhaps twelve hundred adults occupied in all.

In 1670 the attempt of the revenue officers to enforce the payment of the hearth tax assessed on the smithy hearths throws further light on the numbers engaged at this time. The assessment contains a detailed statement of "the names of the cutlers and smiths and their hearths," and enumerates 296 hearths, of which 13 are "newly erected."¹ Such a number would be quite inadequate to provide a

¹ 'Tucker, "Descent of the Manor."

hearth for every master, and thus we have a clear indication of the more or less complete specialization of the bladesmiths' occupation. This means, then, that there were about four hundred persons employed in the work of forging knife-blades, etc. (allowing for assistants or "strikers" in the heavier classes of work), and indicates a large output of goods, even on the assumption that many of the workers were cutlers as well as forgers.

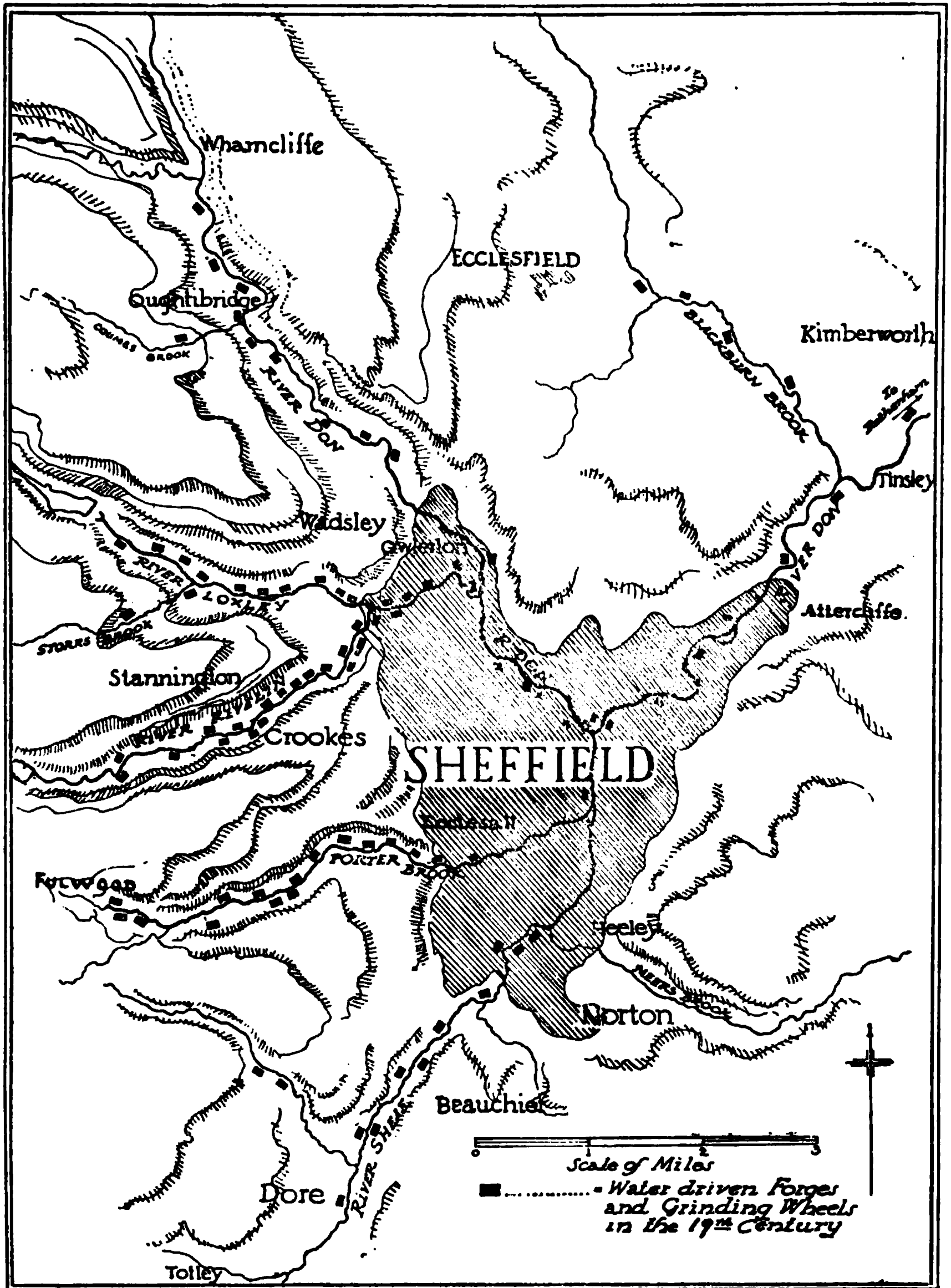
It is not so easy to estimate the number engaged in the trade at the opening of the eighteenth century. In 1710, according to Gatty, "six thousand persons were employed in the cutlery trade throughout Hallamshire, and several thousand more outside the Company's laws in other branches of the iron trade, as smiths, anvil-makers, edge-tool-makers, and nailors."¹ This figure might perhaps stand for the total population dependent on the trade at that time, but cannot be accepted as representing those actually employed in the various crafts. We shall be nearer the mark if we fix the number for the adult workers at about eighteen hundred at this time. By the beginning of the nineteenth century the numbers had risen from this figure to between five and six thousand persons.

The first half of the eighteenth century was a period of rapid expansion, and the increase of numbers caused much alarm in the minds of the cautious officers of the Company, who dreaded an over-stocked labour market and, still more, ill-taught workmen. From about fifty a year at the beginning of the century the number of

¹ "Sheffield Past and Present," 119. Compare the equally absurd estimate of 40,000 persons employed in the metal trades of Hallamshire in 1760—Macpherson, "Annals of Commerce," iii. 323.

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TO THE ANTHROPOLOGICAL



SKETCH-PLAN OF SHEFFIELD AND NEIGHBOURHOOD, SHOWING WATERCOURSES AND WATER POWER FORMERLY EMPLOYED.

apprentices bound rose to 153 in 1735. At the middle of the century boys were coming in at the rate of over four hundred a year.

The importance assumed by the grinding occupation, when this had become definitely specialized, has caused the preservation of records of the number so employed at different periods.¹ These records supply an additional measurement of the development of the trade. In 1770 we find, for example, that there were 133 grinding-wheels (compared with 32 in 1624), containing 896 troughs for grinding, which would employ about twelve hundred men and youths. The fullest possible use must at this time have been made of the River Don and its tributary streams to provide so large a number of separate grinding establishments in addition to 96 water-driven forges and tilts, corn-mills, and other works. In 1794 the number of wheels driven by water power had fallen to 83, but three large steam-driven wheels were in operation, the first having been built in 1786.² These contained 1,415 troughs and would probably accommodate some eighteen hundred grinders, though the number actually employed at the time was only 1,485. In 1824 the most reliable estimates place the number of grinders at 2,500.³ In 1841 this number had increased to 2,816, according to the Census enumeration, but the classification adopted makes it possible that this figure is incomplete. In 1857, at all events, a careful enumeration showed 5,017 grinders employed in 80 steam-driven wheels and 16 water-wheels.⁴ By

¹ See Appendix IV.

² "The Universal British Directory, Sheffield," 1792, p. 400.

³ J. Holland, "A Picture of Sheffield."

⁴ J. C. Hall, "The Sheffield Grinders' Disease" (1857).

1865, out of the 165 grinding-wheels in operation, about thirty-two still relied on water power. These contained about three thousand troughs and employed 3,090 men and 1,073 boys. At the present time the number of adult grinders is about four thousand, with some 550 boys. About a dozen of the old-fashioned water-driven grinding - wheels still continue in operation.¹

In the following table an attempt has been made to illustrate the course of the trades in modern times. The figures for 1830 are based on those given by the *Local Register* for that year. For the years 1851, 1871 and 1891, the Census total has been divided by comparison with the most reliable estimate available from numerous other sources. For the year 1908 the total also is estimated :²

TOTAL NUMBER OF PERSONS EMPLOYED IN THE CHIEF DIVISIONS OF THE CUTLERY AND ALLIED TRADES IN SHEFFIELD.

| | 1830. | 1851. | 1871. | 1891. | 1908. |
|--|--------|--------|--------|--------|--------|
| Spring-knife trade... .. | 2,380 | 4,000 | 5,750 | 6,550 | 6,000 |
| Table- and butcher-knife trade, etc. | 2,672 | 3,750 | 5,250 | 5,400 | 5,000 |
| Steel fork trade | 717 | 650 | 600 | 555 | 200 |
| Razor trade | 654 | 800 | 1,260 | 1,625 | 2,000 |
| Scissor trade | 887 | 1,200 | 1,350 | 1,225 | 1,000 |
| Shears, scythes, sickles, and miscellaneous trades | 535 | 800 | 900 | 1,000 | 1,050 |
| Total cutlery | 7,845 | 11,000 | 15,110 | 16,355 | 15,250 |
| File trade | 1,458 | 3,750 | 5,567 | 5,871 | 5,500 |
| Saw trade | 463 | 950 | 1,250 | 1,169 | 1,200 |
| Tool trade | 603 | 1,100 | 1,692 | 2,348 | 3,200 |
| Grand total | 10,369 | 16,800 | 23,619 | 25,743 | 25,150 |

¹ See frontispiece.

² Full tables of occupation statistics derived from the Census reports and other sources will be found in Appendixes III, IV, V, VI, and VII.

An even more accurate view of the progress of employment in the cutlery industry may be obtained by comparing two careful enumerations of the important group of grinding trades in 1857 and 1908 respectively.

NUMBER OF GRINDERS IN SHEFFIELD IN 1857 AND 1908.

| | 1857. ¹ | | | 1908. ² | | |
|---------------------------------|--------------------|---------|--------|--------------------|---------|--------|
| | Men. | Youths. | Total. | Men. | Youths. | Total. |
| Table blades | 800 | 250 | 1,050 | 900 | 144 | 1,044 |
| Pen and pocket blades ... | 685 | 600 | 1,285 | 618 | 75 | 693 |
| Razors | 300 | 220 | 520 | 397 | 58 | 455 |
| Scissors... .. | 300 | 200 | 500 | 194 | 28 | 222 |
| Surgical instruments | 15 | 12 | 27 | 28 | 1 | 29 |
| Forks and steels | 160 | 120 | 280 | 96 | 21 | 117 |
| Scythes and sickles | 100 | 30 | 130 | 40 | 3 | 43 |
| Sheep-shears and edge-tools ... | 200 | 80 | 280 | 424 | 72 | 496 |
| Files | 160 | 85 | 245 | 373 | 52 | 425 |
| Saws | 160 | 50 | 210 | 216 | 32 | 248 |
| Jobbing grinders | 280 | 210 | 490 | 582 | 57 | 639 |
| Total Grinders ... | 3,160 | 1,857 | 5,017 | 3,868 | 543 | 4,411 |

It will be noticed that in most of the cutlery branches there has been no material expansion of employment during the last half-century ; only in the case of tools has the demand for labour been substantially augmented. Moreover, the striking decline in the number of young people suggests a tendency towards stagnation, though in this particular the figures for the earlier year are probably misleading, since they refer to a period of great trade activity. Nevertheless, an analysis of the age-constitution of the cutlery and file trades, as revealed by the Census figures, clearly

¹ Dr. J. C. Hall, "The Sheffield Grinders' Disease," 1857.

² Including machine workers. Home Office Enumeration, 1908. See Appendix VIII.

demonstrates a marked relative diminution in the proportion of youthful male workers :

PROPORTION OF MALE WORKERS UNDER 20 YEARS OF AGE.
ENGLAND AND WALES.¹

| | | | CUTLERY. | FILES. |
|------|-----|-----|-------------------------|--------|
| | | | Per cent. of all males. | |
| 1861 | ... | ... | 22·4 | 27·5 |
| 1901 | ... | ... | 15·4 | 18·2 |

If we try to picture the situation of the typical Sheffield cutler and grinder in the eighteenth century, we must imagine him as a rough and uncouth artificer, whose hard daily toil brought with it few of those alleviations which we should regard as the essentials of a civilized existence. His home was a small abode, the basement consisting of a workshop and living-room with a mud floor, while a low lean-to smithy was usually to be found in the yard behind. From the living-room a ladder led to the "chamber" or sleeping apartment above, which was open to the slates, in the chinks of which moss was growing. The better houses had casement windows, in which were displayed as advertisements to the passer-by the small written orders of the chapman or factor. In the poorer homes the windows were open in summer and protected by oiled paper in winter.²

Judged by modern standards, the cutlery manufacturers of those days enjoyed but few comforts and fared hardly. "If they could boil the pot once a week," we are told, "it was generally the utmost"; and roast meat was rarely seen. The broth, which was of poor quality, served for the major part of the week's suste-

¹ See Appendix III.

² See *Sheffield Iris*, July 5, 1830.

PLAN OF CUTLER'S



OLD CUTLER'S WORKSHOP, NEAR SHEFFIELD.



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nance. "The personal and domestic decencies which now generally prevail amongst the poorest were then scarcely found amongst the richest." Even so, however, the standard of comfort among the cutlery workers was high relatively to that of the industrial classes in other cities. Malt liquor and butcher's meat formed part of the diet of all ranks,¹ and wheaten bread was universally used; whereas a couple of generations later it was still beyond the reach of one-third of the population, and among the agricultural labourers the use of beef or mutton was still practically unknown.²

From the popular literature of a hundred years ago may be gleaned some indications of the lowly condition of the rank and file of the cutlery workers. One of the most expressive and best known of the old dialect ditties which have reference to the cutlery trades is the song called "The Cutlin Heroes," which opens thus:

"Cum all yo Cutlin heroes, where'ersome'er yo be:
All yo wot works at flat-backs, come lissen unto me.
A basketful for a shilling
To make 'em we are willing,
For flat-backs³ and spotted-hefts³ we daily mun be sellin'
Or swap 'em for red herrin's, ahr bellies to be fillin'."

Next we may turn to a dialect description of a steam grinding-wheel, written when such an installation was still something of an innovation. From this we may gather enough local colour and accurate detail

¹ Eden, "State of the Poor," ii. 873.

² See Handloom Weavers Commission; P.P. 640 of 1840, pp. 27-8.

³ The commonest description of knives.

to give a faithful and vivid impression of the conditions of work in the grinding branches in past times :

"We'n a proime wheel, o'l ashure the', we' a grand polished steeam engine, sixteen horse pahwer, made be Peels and Williams, Manchester. At top at yard there's ahr wheel, an it center at yard there's a lot a steps wot leads intot chamber and garret ; o'ert steps we'n a clock. Here's three heavy trows it bottom room wot they groind table-knoives in, and seven leet ans wot they groind razors an penknoives in ; it chamber aboon there's a room we' ten trows o' penknoife groinders, fitted up we dust machines to ivvera trow, an it garret there's ten trows, all razor groinders, we ivvera thing cumpleat for't wark ; an thah knows there's mooar variety e ahr trade nor't tuther, an sooa we'nt mooast visitors."¹

This account may be supplemented by the citation of a doggerel ditty on "The Grinder's Hardships," dating from the early nineteenth century :

"It happened in the year eighteen hundred and five,
From May Day to Christmas the season was quite dry,
That all our oldest grinders such a time never knew,
For there's few who brave the hardships that we poor grinders do.

"In summer-time we cannot work till water does appear,
And if this does not happen the season is severe.
Then our fingers are numbed by keen winter frosts or snow ;
And few can brave the hardships that we poor grinders do.

"When war is proclaimed our masters quickly cry,
'Orders countermanded ; our goods we all lay by ;
Your prices we must saddle, and you'll be stinted too.'
There's few suffer such hardships as we poor grinders do.

"There seldom comes a day but our dairy-maid² goes wrong,
And if that does not happen perhaps we break a stone,
Which may wound us for life, or give us our final blow ;
For there's few that brave such hardships as we poor grinders do.

¹ Published 1836. Bywater, "The Sheffield Dialect," 149.

² The water-wheel.

"There's many a poor grinder who's thus been snatched away,
Without a moment's warning, to meet the Judgment Day:
Before his Judge he must appear his final doom to know;
There are few who brave such hardships as we poor grinders do.

"Thus many a poor grinder whose family is large,
That with his best endeavour cannot his debts discharge.
When children cry for bread how pitiful the view:
Though few can brave such hardships as we poor grinders do.

"So now I must conclude these few humble rhymes
With 'Success to all grinders who suffer in hard times':
I wish them better fortune—their families the same,
And may we ne'er experience such hardships again,
By being further stinted, and paying discount too,
There are few who brave such hardships as we poor grinders do."

If we wish, further, for a close portrayal of the workers themselves we may find it in an account of the grinders working in the old water-driven wheels of the Rivelin Valley, written by Samuel Roberts:

"Athletic figures with brown-paper turbans, the sleeves of their shirts rolled up high, exposing their brawny arms bare almost to their shoulders, their short jackets unbuttoned, and their shirt collars open, displaying their short, dark, hairy chests, their short, leather aprons, their breeches' knees unbuttoned, and their stockings slipped down about their ankles, the whole tinged with ochre-coloured dust,¹ so as to leave the different colours and materials faintly discernible, form a figure—even when taken singly—sufficiently picturesque; when grouped, as they generally are, they become strikingly so. You see them there: some seated on the stone-raised, turf-covered bench at the door, with their capacious jug and their small pots, handing round the never-cloying English beer; others reared up against the large, round grinding-stone, supported by the walls of the building; and others again seated on the same kind of stones, lying upon or against each other on the ground, whilst some are stretched at their length, dozing or contemplating, on the verdant sloping bank of the mill-dam."

¹ In colloquial speech a grinder was sometimes termed a "yellow-belly," and similarly a file-cutter was called a "nicker-pecker."

Turning to another trade, that of the file-cutter, we may find a pathetic account of the monotonous toil and grinding poverty of these workers in William Mather's ¹ poem entitled "The File Hearer's Lamentation." The verses were doubtless the fruit of bitter experience, for it was in this very trade that the poet himself was brought up:

"Ordained I was a beggar,
And have no cause for swagger;
It pierces like a dagger,
To think I'm thus forlorn.
My trade and occupation
Was ground for lamentation,
Which makes me curse my station
And wish I'd ne'er been born.

"Of starving I am weary,
From June to January.
To nature its contrary;
This, I presume, is fact.
Although without a stammer
Our Nell exclaims I clam her,
I wield my six-pound hammer
Till I am grown round-backed.

"As negroes in Virginia
In Maryland or Guinea,
Like them I must continue
To be both bought and sold.
While negro ships are filling
I ne'er can save one shilling,
And must—which is more killing—
A pauper die when old."

Judging by contemporary descriptions, the Sheffield of the eighteenth century must be thought of as a poor, little, dirty, mean-built town, whose

¹ Born 1737; died 1804.

ill-paved streets were encumbered with the garbage thrown from the houses into the single central gutter. Candlelight gave the only internal illumination, while those whose business called them abroad at night had to carry a lantern with which to find their way.¹ The typical cutler's household consisted of the master and his dame—the latter being a personage of much importance—their children, and possibly also an unrelated apprentice, though usually every boy was bound to his father or uncle. A few journeymen were employed, but as yet the wage-workers were less numerous than their masters. The apprentices were roughly treated, and were often ill-used, and—as was natural—they were poorly clothed and accommodated. A youth in this position was in strict subjection to his master. He was bound by his indentures to respect his master's secrets and to economize his property. Numerous prohibitions were imposed on him: "fornication he shall not commit, nor matrimony contract; taverns or alehouses he shall not frequent; at dice, cards, or any other unlawful game or games he shall not play"—so runs the old form of indenture.² He was, moreover, forbidden to absent himself at any time from his master's service. His master, on the other hand, was bound to chastise him reasonably, to maintain him adequately, and to provide him with all due instruction in "the art and mystery of his craft." When the youth had served his time he might continue to serve as journeyman until he was ready to set up for himself. For this latter purpose no large accumulation was necessary. A capital of £10 was amply sufficient to establish him as

¹ See the *Sheffield Iris*, July 5, 1830.

² See Leader, "History of the Cutlers' Company," i. 39.

an independent master, while £100 a year represented a fortune. It was not until the end of the century that even a master cutler owned his own carriage,¹ and at the time we are speaking of there was as little inequality of wealth among the various grades of workers as in the mediæval gild.

Even in comparison with other towns, the standard of wealth in eighteenth-century Sheffield was but modest. Adam Smith, we may note, comparing the low wages prevalent in Sheffield with the higher rates found in Birmingham, whose industrial expansion had been very rapid, accounts for the disparity by attributing it to the fact that Birmingham produced articles dependent on fashion and fancy, while Sheffield manufactured staple commodities, the steady demand for which rested on use and necessity: "Birmingham deals chiefly in manufactures of the former kind; Sheffield in those of the latter: and the wages of labour in those two different places are said to be suitable to the difference in the nature of their manufactures."²

When Arthur Young visited Sheffield (c. 1769) the trade with America was causing a burst of industrial activity, and the consequent prosperity of the industrious inhabitants of the town impressed him strongly. "Upon the whole," he says, "the manufacturers make immense earnings." A few men engaged in laborious work earned no more than 6s. to 7s. a week; but the number of these was small, and most men received from 9s. to 20s. a week. The grinders made the greatest earnings—18s., 19s., and 20s. a week—owing to the dangerous character of the trade.

¹ Hunter, *loc. cit.*, 173 n.

² "Wealth of Nations," Bk. I. ch. x.

In other branches men received from 1s. 6d. and 2s. to 10s. 6d. a day; the first being common wages, and the last easily earned by the polishers of razors. Even girls were earning 4s. 6d. to 5s. a week, and some as much as 9s.¹ Eden corroborates these figures, stating the earnings of men at from 10s. to 30s. a week.²

In the first half of the nineteenth century Sheffield still ranked far above other manufacturing towns in respect of the prevailing standard of comfort. There were hardly any families living in cellars or garrets, and usually each family occupied a self-contained house. Indeed, the workers of that day by common consent enjoyed higher intelligence and morality, and a more robust physical condition than the inhabitants of the cities where machinery was extensively used. Put in another way, the middle classes represented a greater proportion of the population than was the case in these other towns, though the merchants and manufacturers were not men of large capital, and were far from "treading on the heels of the aristocracy." There was thus not only less misery, destitution, and ignorance, but also less opulence and extravagance than was to be found in cities like Manchester and Liverpool.³ On the other hand, intemperance was rampant, being facilitated by the enormous number of licensed inns and beerhouses—one to every 105 inhabitants.⁴

When we come to consider modern conditions we find that Sheffield can hardly be said to have retained any marked superiority over other centres in this matter of working-class comfort, though strenuous efforts are

¹ A. Young's "Tour," i. 122. ² Eden, "State of the Poor," ii. 873.

³ G. C. Holland, "Vital Statistics of Sheffield," 69. ⁴ *Ib.* 259.

being made by those responsible for civic betterment to overtake the best modern standards. The housing of the present generation of workers is old-fashioned. The commonest types of working-class dwellings have three, four, or five rooms, and there are a smaller number of two-roomed houses. The largest class consists of three-roomed houses on a back-to-back plan and built round courts. The courts are small in area and give little opportunity for the proper circulation of air. Each court has four or five houses on each side, and is entered from the street by a narrow tunnel driven below the first-floor rooms of each fifth or sixth house along the street. The rooms are placed one above the other; on the ground-floor is the living-room, above that the "chamber," or principal bedroom, and above that again a garret bedroom. The house-door opens directly into the living-room; a door from the living-room, again, gives access to the stairs. Sculleries are often found at the side of the living-room, though water is usually obtainable only from a standpipe in the court. In the court are also the common conveniences, usually one for every two houses. The rooms in such houses are generally about twelve feet square. No back-to-back houses have been built since 1864, but in 1905 it was computed that 16,000 were still standing. Surface drains are still common, though they are gradually disappearing. Great strides are now being taken by the municipal authorities to raise the standard of housing, and the city has made extensive use of the powers conferred by the various Housing Acts and other legislation of a similar character.¹

¹ See Report on Cost of Living in Principal Towns of the United Kingdom, Cd. 3864 (1908).

CHAPTER VII

INDUSTRIAL ORGANIZATION

I. TRADE SPECIALIZATION.

THE organization of the Sheffield cutlery trade, at the time when the history of the cutlers as a corporate body of craftsmen begins, can be inferred with some certainty from the indications which have come down to us in their Acts and Ordinances, and we are able to trace its development from the relatively simple form which it first assumed, through a steady process of industrial demarcation and progressive specialization, down to the present time.

In the seventeenth century the picture presented is that of a fairly homogeneous group of workers, each master having received a comprehensive training during the period of his apprenticeship, and thereafter, as a rule, being engaged for some time as a journeyman before taking out his mark and setting up for himself as an independent master. At first sight we seem to have neither industrial specialization nor social distinctions, but a closer examination reveals the presence, in some measure, of both. The making of wool-shears, of sickles and scythes, of scissors, and of knives, constituted distinct trades from the time of their first appearance prior to the Act of incorporation—and the marks of these crafts are thereafter

entered separately in the records of the Company. Moreover, from about the time of incorporation the occupation of the scythe-grinder appears to be already distinguishable from that of the scythe-smith, and probably the same division existed in the trades of the shear-smiths and scissors-smiths. In the knife trade, however, which at this time included razor-making, no similar demarcation existed. The ancient division of the cutlery trade in London and elsewhere had been tripartite, the occupations of the bladesmiths, the hafters, and the sheathers being mutually exclusive. In Sheffield also the language of the Ordinances of 1565 and 1590, which impose separate prohibitions on the "cutler or hafter of knives"—against hafting blades for the chapmen, hardwaremen, or dagger-makers, and on the "bladesmiths"—against selling blades to the dagger-makers, as also the use of the phrase "cutlers and makers of knives," is consistent with a partial separation of these employments. Certainly the occupation of sheath-maker was already a distinct one. On the other hand, there is no doubt that knife-grinding had not as yet become a separate occupation.¹ It is conceivable that there may have been an earlier period when the trade was less completely organized, and when the occupation of knife-making was more clearly divided into forging and hafting—a suggestion to which the fourteenth century poll tax records already referred to, and the reference to Sheffield in Leland's "Itinerary," lend some support.²

¹ The trade description "sheather" occurs several times in the registers of Norton Parish, 1560-1600. (See Leader, *British Arch. Ass.*, 1908, 157.)

² Cf. also York. Gatty's Hunter's "Hallamshire" gives Fuller's authority for the same subdivision, 165.

Nevertheless, at the time of the incorporation of the Company in 1624 no trace of such separation is to be found. Doubtless there were then, as always, some partially trained workers competent to pursue only a portion of the work, but it is quite clear that during the seventeenth century the normal practice was for the forging, grinding, and hafting to be kept in the hands of the same individual master workman. ✓

Distinctions of social status, at the time of incorporation, are revealed by the presence of a body of comparatively well-to-do master cutlers "able to set on work many poor men, . . . who have very small means of maintenance of living other than by their hard and daily labour as workmen to the said cutlers."¹ Amongst these masters there was a still smaller number who occupied the water-driven grinding-wheels as tenants of the Earl of Shrewsbury, whose rental from this source amounted to about £150 per annum. He in turn sublet the accommodations to the poorer masters. Sometimes three or four masters united in the joint tenancy of a wheel or portion of a wheel.² That this was the case is evident from a

¹ Act of 1624, Preamble.

² The will of Nicholas Ratcliffe, a scissors-smith, proved in October, 1769, throws some light on the nature of these tenancies. He bequeaths to his son John "one half of all my wheel tools both small and great, and one trow at Entcliff wheele, being on the side of my part thereof, for one person to work at a time or times, during his natural life, he paying, or causing to be paid, five shillings a year during his natural life to my Executor. And he, the said John Ratcliffe, to wedge and grease, and to find grease, during his natural life, my Executor paying all rents, assessments, and repairs. Which if my son John Ratcliffe do not approve and like thereof, my Executor to pay him, or cause him to be paid, the sum of twenty pounds of lawful money in a year and a day after such refusal, he quitting the premises before the money be paid." Among further legacies he

comparison of the total number occupied with the number of the lessees. Thus Harrison's "Survey" gives a total of less than fifty tenants of cutlers' wheels in 1637, though it speaks of them as being used by 400 to 500 masters for the execution of the grinding.

† We may conclude, from the glimpse that we get of the cutlery craftsmen prior to their incorporation in 1624, that there then prevailed a simple handicraft form of trade organization, with an almost complete absence of differentiation or specialization. The typical master was competent to work either at the bladesmith's hearth, in the grinding-wheel, or at the cutler's bench. Their very description as "cutler makers of knives" suggests an all-round proficiency. The industry was, however, already throwing out sideshoots from the main occupation of knife-making. Sickles were no doubt made by the cutlers in early times, and by the beginning of the seventeenth century other products, such as scissors and shears, had made their appearance. Though razors are not as yet specially mentioned, it is reasonable to suppose that, since their production was well within the capacity of an expert bladesmith, they had long been manufactured in small quantities. The file trade, again, seems to have had its small beginnings far back in the seventeenth century. At all events, by the beginning of the eighteenth century this young industry had acquired a wide reputation, as is shown by the efforts made in 1727 to induce file-makers from Sheffield to emigrate to France.¹ The attractions held out to

left the sum of one shilling to his son's wife; and he bequeathed to his sons John and George his seats in the Parish Church, which were his property. (Probate Registry, York.)

¹ See *Sheffield Iris*, September 2, 1802.

these men were substantial. They were to be supplied with all the requisites of their calling; they were to settle in pleasant localities where living was cheap: they were to enjoy religious liberty. Trade was then bad in Sheffield, and a large number resolved to make use of the opportunity. They were, however, deterred by an Order in Council which was hastily promulgated, threatening them with disfranchisement and other penalties. As soon as Parliament met a law was passed flatly prohibiting the emigration of artisans.

In the course of time the cutlers' fraternity—at first a homogeneous body of craftsmen—became separated into isolated sections or trades. Thus the cutler was gradually restricted to the manufacture of knives and razors, the shear-smith to that of shears and sickles, the scissors-maker to large and small scissors, while the awlblade-smiths, the scythe-smiths, and the file-smiths each acquired their special occupations. An interesting clause in the by-laws of 1662 thus defined the division of the industry into the three trades of (1) knives, (2) scissors, (3) shears and sickles: "Whereas the making of knives hath, time out of mind of man, been accounted one distinct trade and occupation, and the making of scissors one other distinct trade, and the making of sheers and sickles another distinct trade within the Liberties, etc., and none of them have used to intermeddle with the other: no user of the trade, mystery, or occupation of a Cutler for the making of knives shall henceforth use the trade of making or grinding scissors, sickles, or sheers; no scissors-smith shall make knives, sheers, or sickles, or do any work concerning the trade of cutlers, sheer-smiths, and scissors-smiths; no sheer-smith or

sickle-smith shall make or grind knives or scissors, on penalty of £10." The scissors trade traditionally included not only the smaller kinds of scissors, but all so-called shears, such as garden shears and tailors' shears, which "turn upon the nail as scissors do"; on the other hand, all shears working by a spring, such as sheep-shears, belonged to the craft of "makers of sickles and shears."

Early in the eighteenth century the razor trade and sickle trade became distinct from the knife and shear trades respectively, the former demonstrating the technical progress that had been made in the production of the highest quality of goods, and giving openings for such elaborate processes as etching, engraving, polishing, and plating. The manufacture of fine surgical implements, lancets and fleams, was also introduced, and clasp-knives made their first appearance about 1650. Forks do not seem to have been made before the eighteenth century. There was, however, a tendency for the combined pursuit of several trades to be undertaken by a single master or firm, which led to difficulties with regard to qualifications. Indeed, the principle of *one man one trade*, which was established in the seventeenth century, was seriously impaired during the course of the eighteenth. Thus, for example, the silver-plate trade, introduced in 1742, was taken up by many of the cutlers, and throughout the later history of the Company we have constant complaints against masters who took up more than one branch of the corporate trades when their qualifications only referred to one.

Next to the progressive differentiation into separate trades the most noteworthy feature of the development we are tracing was the tendency to the subdivision of

each trade by the specializing of the different consecutive and complementary processes of manufacture. Evidence of grinding as a distinct occupation in the scythe-trade occurs from 1630-50, when the description "scythes-grinder" occurs repeatedly. In the other branches, however, this separation did not usually obtain. Mr. Leader cites an interesting case in 1653, which is important as clearly demonstrating the custom of the trade at that time. An apprentice whose master had undertaken to instruct him in his trade—which embraced the making of blades, razors, penknives and surgeons' instruments—complained that his instruction was being neglected. The Company, to whom the dispute was referred, replied by pointing out that under the guidance of the master the lad had ample opportunity of becoming proficient both in "forging, tempering, and grinding, which are the foundation and principal branches of that art and mystery ; and not that only, but according to his ingenuity and industry, being first fully instructed in the fundamental art, he may turn his hand to make all those particular instruments anyways belonging or apperteyning to the said art and mystery." ¹ The expressions "cutler-wheels," "cutler grinder," and specific undertakings to learn "to make and grind" point to the same conclusion ; indeed, it is clear that the definite specialization of the occupation of grinding as distinct from forging was not generally effective before the middle of the eighteenth century. By 1748, however, the grinders were sufficiently distinct to have a sick club of their own ; on the other hand the combination of forging and grinding did not completely vanish till a century later, when a few men might still be found

¹ Leader, "History of the Cutlers' Company," i. 38.

who were accustomed to perform all the operations incidental to the manufacture of a pocket-knife—both forging and tempering blades and springs, and, after grinding, building up the completed article.

The restriction of the typical operative to a specialized process gradually became effective during the eighteenth century, though there were important exceptions. For example, the process of forging remained an integral part of the cutler's task in the spring-knife trade till well on in the nineteenth century. This is clearly shown by a wage or price list for "forging, setting in and hafting" spring pocket-knives issued in 1824, while the same combination has been known within the memory of workers now living. For the most part, however, we find one hundred years ago, as now, a full and effective separation of the main processes of forging, grinding, and hafting or putting together, in each of the various trades. We are thus able to trace the emergence of nearly a score of separate occupations out of the single undifferentiated craft of the sixteenth century.

II. THE TRANSITION TO MACHINE METHODS.

In the case of an industry so multifarious in its processes as the cutlery trade, the advent of the steam-engine could effect no sudden revolution. Indeed, it was only very gradually that steam power took the place of water power, and thus promoted the concentration of those branches which required mechanical assistance. It is interesting to remember in this connection that in the textile industry of the West Riding and Derbyshire there were in operation, even

in 1835, 589 water-wheels, as compared with 615 steam engines.¹ The following table, derived in each case from contemporary records, illustrates the corresponding transition from water to steam power in the Sheffield grinding trades.²

GRINDING WHEELS IN SHEFFIELD.

| Year. | | | | | | Water. | Steam. |
|-------|-----|-----|-----|-----|-----|-----------------|---------|
| 1794 | ... | ... | ... | ... | ... | 83 | 3 |
| 1841 | ... | ... | ... | ... | ... | 40 | 50 |
| 1857 | ... | ... | ... | ... | ... | 16 ³ | 80 |
| 1865 | ... | ... | ... | ... | ... | 32 | 132 |
| 1889 | ... | ... | ... | ... | ... | 12 | 300-400 |
| 1908 | ... | ... | ... | ... | ... | 8 | 300 |

This increasing use of steam power naturally favoured industrial concentration and the transition to large-scale production. Other influences, however, the nature of which will become clearer as we proceed, have successfully counteracted this tendency, or, at least, have greatly retarded its effectual assertion. The concentration of the trades within the city limits was an established fact even before steam power became the dominant motive force, for it must be remembered that very many of the small industrial establishments, both water-driven wheels and domestic workshops, congregated inside the urban boundaries. Nevertheless, a study of the Census figures shows how persistently and successfully both the cutlery and file trades have resisted the tendency to complete urbanization, and that in spite of the wide territory coming under the civic government of Sheffield.

¹ Ure, "Philosophy of Manufactures," Appendix.

² See Appendix IV. ; also sketch map of Sheffield district, p. 155 above.

³ J. C. Hall ; probably under-estimated.

CUTLERY.¹

NUMBER OCCUPIED: MALES AND FEMALES—ALL AGES.

| | 1841. | 1861. | 1881. | 1901. |
|------------------------|--------|--------|--------|--------|
| Within the city | 9,979 | 14,104 | 15,290 | 14,436 |
| Outside | 2,071 | 1,524 | 1,224 | 1,834 |
| Total | 12,050 | 15,628 | 16,514 | 16,270 |

FILES.

NUMBER OCCUPIED: MALES AND FEMALES—ALL AGES.

| | 1841. | 1861. | 1881. | 1901. |
|------------------------|-------|-------|-------|-------|
| Within the city | 2,324 | 4,934 | 5,531 | 5,266 |
| Outside | 658 | 1,214 | 1,265 | 1,162 |
| Total | 2,982 | 6,148 | 6,796 | 6,428 |

The further effect of steam power has been to increase the regularity of work and thus to intensify the labour involved. In the old days of the grinding trade, for example, operations were necessarily intermittent on account of the periodic excess or deficiency of the water supply in the wheel dam. Perhaps in consequence of this habitual irregularity, the custom of doing little work early in the week and making up time by working long hours at the latter end of the week, which is still characteristic of the out-workers among the journeymen, became firmly established at an early date. As an illustration of this conventional alternation of easy-going and intensified labour we

¹ See Appendix III.

may quote from an eighteenth-century ballad by an unknown author :

“ Brother workmen, cease your labour,
Lay your files and hammers by ;
Listen while a brother neighbour
Sings a cutler's destiny :
How upon a good Saint Monday,
Sitting by the smithy fire,
We tell what's been done o't Sunday,
And in cheerful mirth conspire.”

The ballad proceeds to narrate how the repose of the gathering is rudely broken by the irruption of the singer's termagant wife, who “ speaks with motion quicker than my boring-stick at a Friday's pace ” :

“ ‘ Pray thee, look here, all the forenoon
Thou's wasted with thy idle way ;
When does t'a mean to get thy sours done ?
Thy mester wants 'em in to-day.’ ”

Much of this customary irregularity has disappeared with the steady extension of factory methods ; similarly the unduly long hours and bursts of feverish activity such as were formerly customary during the week preceding Christmas—locally known as “ Bull Week ”—are now almost unknown. Finally, the Saturday half-holiday, which was introduced about 1840 and was fully established twenty years later, has brought a material alleviation to the toil of the week.

Evidence of the very large number of separate establishments in existence in Sheffield up to the middle of last century may be found in an enumera-

‘ “ The Jovial Cutlers.”

tion of hearths, furnaces, and warehouses made in 1846. The forgers in the cutlery and allied trades, who commonly worked in virtual isolation, then occupied 2,535 hearths, the pressers for various trades operated 401 distinct furnaces, while even the warehouses belonging to the proprietors and undertakers of the several industries reached a total of 1,344.¹ So again, at the end of the century the factory inspectors' records showed 15,970 cutlery workers over eighteen years of age in the factories of the United Kingdom, working in 2,732 establishments.² This gives an average of five male adults and one female per establishment, in spite of the fact that the total includes the subsidiary workers in warehouses, etc., and does not take account of the numerous semi-solitary out-workers who do not employ power-driven machinery. As further evidence of the continued diffusion of the industry, it may be noted that the cutlers and grinders at work to-day—comprising about 8,000 adult men—are dispersed through some 2,800 separate factories and tenements, not counting domestic workshops, or only three workers to a tenement on the average.

Nevertheless, it must be remembered that the number of large factories has steadily increased ever since 1823, in which year the first factory on a comprehensive scale was erected, embracing all the essential processes from the production of steel to the completion of the perfect article.³

The employment of steam power is important not

¹ See Appendix VII for details.

² 1901. Report of Chief Inspector of Factories, 1904, Cd. 2569 and 2848.

³ Messrs. Greaves, Sheaf Works.

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TO THE
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"SINGLE-HANDED" FORGING: POCKET-KNIFE BLADES.

merely as encouraging the application of a complete mechanical method of production in substitution for the older hand process, but still more, perhaps, for its auxiliary use, even when the traditional method is retained in all essentials. This auxiliary application has at all events done much to lighten the task of the cutlery-worker. Thus, for example, the former tedious hand-filing of the bolsters of table-knives has been abolished by the substitution of power-driven glazers and emery-wheels. The use of the bow-drill for piercing the steel blades and accessory parts is fast disappearing from the modern cutler's shop. In the preparation of the steel for the forger's use immense improvements have been made since the days when his material consisted of a roughly tilted bar. Now it is closely adapted both in size and shape to its ultimate purpose before it reaches the worker. It is the hand-forger's department, however, which has suffered more than any other from the substitution of a machine process. Indeed, it appears certain that within the comparatively brief space of one more generation the general use of hand-forging will disappear, and it will be possible to apply to hand-forgers as a class the words of an old epitaph :

"My sledge and hammer lie reclined ;
My bellows, too, have lost their wind ;
My fire's extinct, my forge decayed,
And in the dust my bones are laid."¹

The use of mechanical stamps for silver and other soft articles goes back to the eighteenth century ; but

¹ 1757 ; from the Church of St. Peter, St. Albans. Qu. by Porter, "History of the Art of Forging" (Univ. of Chicago Lectures on Commerce, 1904).

the credit for the first attempt to provide a substitute for the hand-forging of steel blades on a commercial scale appears to belong to one Smith of Sheffield, who in 1827 devised a form of the rolling-mill which produced knife-blades by the pressure of revolving dies. This invention was not completely successful at the time, though it was afterwards perfected. The application of mechanical stamping to scissors-forging was also accomplished in France during the first half of the nineteenth century, and this was closely followed by the successful stamping of razor-blanks.¹ Neither rolling nor stamping, however, can give to steel the character it acquires when subjected to prolonged hammering, and consequently mechanical hammers with rapid action have been preferred to presses for articles which require elasticity and toughness of structure, such as table-blades. During the last three generations the mechanical forging of blades has been slowly perfected, beginning with the application of the trip-hammer, and developing into the use of the modern pneumatic and spring hammers. Moreover the production of cutlery blades in presses has also been successfully employed since about 1890. Other accessory parts, such as scales and springs, are now universally stamped or "fied" out of sheet metal, instead of being hammered into shape. To-day, indeed, the supplying of machine-forged and "fied" parts for cutlery manufacture is an important business organized on modern large-scale factory lines.² Finally, it may be noticed that many of the larger cutlery firms in Sheffield have now introduced auxiliary

¹ C. Pagé, "*La Coutellerie*," iii. 571 *seq.*

² The value of the output of such firms for the year 1907 was £74,000, according to the Census of Production returns.

mechanical aids for facilitating the later stages of the cutler's work, such as are used in Germany.

In the grinding branches, also, great mechanical advances have been made. Saw-grinding machinery was first introduced in 1858 from America, where beautiful machine-made work was turned out at one-third of the former Sheffield cost.¹ John Wheatman, a saw-maker, had previously emigrated to America, and while working at his trade there became familiar with the new process ; after which he returned, and in partnership with another saw-maker established the firm of Wheatman & Smith, which first introduced mechanical saw-grinding into Sheffield. It is now possible to apply machinery also to the preliminary grinding of razors and other edged implements, while the greater part of the heavy labour of file-grinding is generally performed mechanically.

Nevertheless, despite these important mechanical advances, the use of hand labour shows no sign of being completely superseded. As an example of the characteristic extent to which hand work is still relied upon, we may consider the case of the spring-knife trade, an industry which retains all the distinctive features of the cutlery crafts of past times. Until a generation or two ago, a pocket-knife was a hand-made article : the blade forged by hand from a steel rod ; the springs and metal side-covers or scales also hand-forged : the whole article hand-ground, hand-fitted, and hand-polished or finished, so that each knife had a specific individuality. Not very long ago a batch of stolen knives was recovered and brought into court, and after inquiry, the men who made them were found, each man being able to pick out the

¹ Children's Employment Commission, 4th Report, 1865.

individual knives he had made by means of small peculiarities and private marks. In this manufacture great judgment and skill are required at every stage, and long training is required to produce a fully competent worker. This will be readily understood from an example of the work for which an out-working cutler is responsible if operating single-handed on the old system.¹ The cutler is making, let us say, a common single-bladed pocket-knife, and is supplied with the ground blades, the springs, the metal scales, and other covering material, such as horn, bone, or wood, providing himself the requisite tools and appliances for boring, hardening, and glazing the springs and building up the knife. In this task there are as many as forty-two distinct processes to be performed. The scales are handled fifteen times, the springs thirteen times, the blade six times; to make the "haft" or handle requires three operations, and the insertion of the blade and the production of a complete, true-working but unpolished knife another six operations. In a fine four-bladed knife there are three or four times as many such operations to be performed—150 or so. In earlier times, even though the work of the cutler was often combined with that of the forger, the number of separate handlings was probably smaller than it is at present, since the modern work is more elaborate and more nicely executed. Thus, an account of the operations involved in making a penknife in the early part of last century gives details of four processes in blade-forging, four in making scales and springs, eight in the grinding, and twenty-three in the cutler's work, or thirty-nine in all.²

¹ See Appendix IX. ² Bywater, "The Sheffield Dialect," 33.

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CUTLER IN DOMESTIC WORKSHOP.

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ABSTRACT

The trade of a table-knife cutler, or "hafter," as he is sometimes called, is equally detailed; a man engaged on better class work, where care is essential, will go through more than forty distinct operations with each batch of knives, although in this case the knife consists only of two parts.

The above examples, which might be multiplied, are sufficient to illustrate that extensive reliance on manual skill which still remains one of the most characteristic features of the cutlery trades.

III. LITTLE MASTERS AND OUT-WORKERS.

Another feature which more than any other has differentiated the cutlery trades from the normal type prevailing among British industries during the nineteenth century has been the preservation of the traditional independence of the individual worker, which long prevented the appearance of any strong line of demarcation between manufacturer and artisan,¹ and so made possible the ready and frequent transition, under favourable circumstances, from the position of workman to that of "little master." This term, by right of direct inheritance from former generations of independent craftsmen, can be appropriately applied to every semi-capitalistic out-worker. Strictly speaking, however, the name "little master" applies only to men whose enterprise, on account of its nature or scope, involves a substantial share of commercial risks and liabilities.

¹ The writer has met with a case in which a working grinder was able to lend his master £300, when the latter was on the verge of disaster owing to the collapse, in 1843, of the bank in which his savings were deposited.

Such small undertakings have at all times been numerous in the various branches of the cutlery trades. There has always been a tendency in Sheffield for the skilled workers—who customarily owned their working tools and apparatus—to produce goods on their own account. Indeed, it has been in this way that the great firms of the present day have originated. Thus, an observer about the middle of last century writes: "That small makers can succeed in Sheffield is singularly proved by the fact that nearly all the manufacturers at present doing the largest amount of trade—and employing hundreds and in some cases thousands of workmen—commenced originally as small masters, and have gradually, to their honour and credit, arisen to be merchant princes. Scarcely any of our large manufacturers entered the trade as capitalists, but worked from small beginnings to their present success and wealth."¹

Thus the cutlery trades have always been small-scale industries, and under such conditions it is not usual to find any great degree of permanence in the case of an individual firm. Even where a small business does descend for several generations in a direct line, it is likely that all record of such descent may vanish in the vicissitudes that from time to time affect its fortunes. It is therefore interesting to find that there are many among the foremost cutlery firms in Sheffield to-day which are able to trace their history over a continuous period of between one and two centuries.²

¹ G. L. Saunders, "Town and Country: An Enquiry into the Health of Sheffield."

² The following examples may be mentioned here. The firm of Messrs. J. Nowille & Sons mark on their knives "Established

When the tools employed were few and simple, and the capital required extremely small, there could be no great distinction between master and man. On the other hand, in an industry in which there was no scope for large-scale enterprise the making of fortunes was necessarily a slow process.¹ The greatest multiplication of little masters has always taken place—contrary to what might, perhaps, be anticipated—during times of commercial stagnation and distress, rather than in a period of booming trade. The reason for this was that in bad times there was an urgent inducement to independent production to fill the gap in earnings caused by the diminution or disappearance of the better paid work obtained from the regular manufacturers. Often the ruinous prices at which the producers had to sell checked this form of enterprise and reduced it to moderate proportions, but the number of individuals who managed to make a living in this way has always been considerable at such times.

The connection between a depressed condition of trade and the increase of little masters was graphically

A.D. 1700," a corporate mark having been granted to Thomas Nowille in 1700, and the business having descended from father to son for eight generations. The mark used by Messrs. George Butler & Co.—a key—was registered in 1681. The celebrated business of Messrs. Joseph Rodgers & Sons can be traced back to the hiring of a workshop by John Rodgers in 1724; but their world-famous mark—the Star and the Maltese Cross—was registered as early as 1682. Messrs. Michael Hunter & Sons were established about 1770. The firm of Samson & Sons, now incorporated with Messrs. Harrison Bros. & Howson, dates back to 1796. Messrs. Matthias Spencer & Sons, file-makers, own a mark granted to an ancestor in 1749; but the firm was founded long before this date. Numerous similar instances might be cited.

¹ See "Inquiry into the Moral, Social and Intellectual Condition of the Industrial Classes of Sheffield," Part I: "The Abuses and Evils of Charity," 1839.

depicted by a speaker at a public meeting in the Cutlers' Hall during the depression of 1820, at a time when 1,600 spring-knife cutlers were out of work :¹

"The cheapness of the raw materials enables every man who can raise money or credit enough to purchase as much of them as he can manufacture in a week to set up master for himself. . . . Among the discharged journeymen, therefore, the number of these 'little masters,' as they are called, has been amazingly multiplied during the last two years, whereby goods to an incalculable bulk, but often very inferior workmanship, have been made and pushed off through new and strange channels on the meanest terms, for money, for stuff, for anything, for nothing. A workman whom I saw at the Cutlers' Hall the other day said: 'I have been running up and down to-day through a great many streets, and everywhere the little masters are as 'throng' as they can be with their black faces and their packing-boxes, but the great workshops are as still as this Hall when there is nobody in it.'"

So, too, in the great depression of 1842-4, when only one-fifth of the workers were able to secure full employment, and even they earned less than 20s. a week, the trades were swarming with little masters, there being more than five hundred in the spring-knife trade alone.

Many of these little masters were engaged in the forging and hafting of blades, receiving their orders from the factors, who usually supplied them with the necessary steel and purchased the finished goods. On the other hand, a forger might buy steel, work it up into blades and give it out to the grinder, himself disposing of the completed knives. Other little masters were responsible for the grinding operations, and hired their own helpers. A grinder, however, might undertake work on his own account or might buy the blanks and sell them again when ground,

¹ James Montgomery, March 15, 1820.

employing other men to work with him. A cutler, again, could get credit for materials, then get his blades forged and ground by others, and himself, with the assistance of needy workmen, complete the articles, either selling direct to merchants or hawkers at rates lower than the regular manufacturer, or turning "carpet-bagger" and carrying his wares to fairs, seaside resorts, and other likely markets, or disposing of them by auction.

The little masters, having no capital and being thus dependent on their weekly earnings, cannot hold out against a reduction of prices when a period of trade depression occurs. At such a time they exercise a most potent influence in reducing the wage-rate of the out-workers. This tendency is vividly described in the testimony of a witness possessing an intimate familiarity with the practice of the trade :

"The outworker will go to the office of the small merchant or factor and apply for work ; he is informed that in consequence of no orders being on hand there is no work for him. In all probability he tries several places and they all tell him the same. He then returns to the original place and is informed that he can have a little work, which will be counted as stock work, if he will do it at a further reduction. Of course he does not like it, knowing that he can make so very little out of the work at the very best of prices, but in consequence of having no capital he is compelled eventually to accede to the request, or the demand, rather, of the small factor. As a rule the goods that are produced in that way enter into competition with firms of fair standing, and thus the market is brought down ; the prices are reduced in the market to such an extent that it is exceedingly difficult for a profit to be made." ¹

When the work is done on credit given by a factor it is not an uncommon occurrence for such a man, if

¹ Alderman S. Uttley, House of Lords Committee on the Sweating System, 3rd Report, 1889, Qu. 24717.

unscrupulous, to refuse to accept delivery when the work is done, except at a lower price than is customary, knowing the limited resources of the little master and that his men are waiting for their wages ; thus these men are often compelled to accept earnings far below the current standard.

The little masters have always been the bane of the manufacturers, but they have been even more fatal to the success of labour unions. They could undersell the substantial firms because their fixed charges were insignificant, and their labour was the cheapest in the market ; on the other hand, no trade union could operate successfully under conditions which destroyed all solidarity and cohesion, when men who might have been the backbone of the union were interested in cutting down the price of labour to a minimum. Thus the little master has nobody's goodwill. To the trade unionist he is a delinquent, and a traitor to his class, and often, moreover, he is the worst possible employer. To the employer he appears as a dangerous disturber of markets ; he is indeed the despair of the honest manufacturer, who sees his high quality goods pushed out by worthless imitations.

There are still two classes of "little masters" properly so called ; the first occupy a small office and warehouse, and are really factors on a small scale, having little or no work done on the premises, but utilizing the labour of out-workers—generally those who are neediest and the poorest workmen. These men buy the parts of the article stamped out by machinery, and having had them worked up, travel round to country towns and watering-places selling at prices at which they can defy the larger establishments

who have heavy fixed charges and higher wage-rates to meet. The other class of little masters consists of working grinders, or of cutlers who employ a team of two to six men on time-wages to work with them. Such a man rents a whole room in a tenement factory—a cutler's shop or grinding "hull" as the case may be—and takes work wherever he can find it, either from the warehouse of one or more of the larger factories or from little masters who do a factoring trade.

Among the out-workers, and in branches of trade in which that system is predominant, it is still customary for the apprentice to be bound, not to the large employer, but to the artisan, and formerly the lads usually lived with the men to whom they were bound, and were expected to perform a stipulated daily task in order to earn their weekly allowance of pocket-money. As late as the sixties the large majority of the boys engaged as apprentices were formally indentured, and were lodged, fed, and clothed by their masters. Whatever the boy's age when bound, he was obliged to serve until he came of age, and thus the period of servitude commonly extended over more than ten years.¹ The usual age at which employment began in Sheffield was eleven, but hafters commonly went to work as early as eight years of age or even younger.² In 1843 there were over a thousand children under thirteen thus employed, though it was a period of trade depression, and the total number under twenty-one years was less than 4,000.³ In 1865 girls

¹ Children's Employment Commission (1862), 4th Report, 1865 : 1. Mr. J. E. White's Report on Sheffield.

² Jelinger C. Symonds, Report on Sheffield Trades, 1843.

³ *Ib.*

as well as boys were being put to cutler's work at seven or even six years of age; and in one case a boy of five was found working. Even in the dangerous trade of fork-grinding—"one of the deadliest occupations known"—children of tender years were employed.¹

X The system of giving out work to be done elsewhere than on the employer's premises is perhaps the most characteristic feature of the domestic system of production, though it is no longer necessarily accompanied by the significant simplicity of organization and absence of subdivision of employment which prevailed at an earlier time. The prevalence of out-work serves, however, as the simplest test of the survival of the older form of industrial organization, and it is important to understand the causes of its persistence. How is it that the out-worker and the little master have been able to resist the forces tending to drive them into the factories? Before trying to give a comprehensive reply to this question it will be well to look more closely at the existing organizations of the trade as at present divided between factory workers and out-workers.

✓ A particularly good illustration of the survival of small-scale production is to be found in the case of file-cutting by hand. The substitution of machinery for the hand process was not attempted in Sheffield before about 1875, although successful machines had been introduced and tested in 1846,² and by 1865 had been in use near Manchester and Birmingham and were

¹ Children's Employment Commission. In the process of fork-grinding the article loses 25 per cent. of its original weight, which is thrown off in the form of fine dust.

² *Sheffield Iris*, March 12, 1846.

freely employed in France, where excellent files were produced by this method which were successfully competing with the Sheffield product in continental markets. It was, indeed, not so much the technical difficulties of the new process as the stout resistance offered by the established mode of labour and industrial organization which prevented its earlier introduction, and the same influence has caused the old system of production to survive down to the present day—though with seriously impaired vitality. Nevertheless, machinery at last dominates the trade and is responsible for the bulk of the output, practically monopolizing the heavier sorts, although until 1895 it remained subordinate to the hand-cutting. So, again, with file-forging, which in its heavier branches was formerly a “double-handed” trade demanding unusual physique, there are now but few hand-forgers to be found, the steam-hammer having been introduced about 1879. Many of the hand cutters have passed to the machines and the number of hand workers has been considerably diminished. Still the trade is by no means extinguished. In 1900 there were about 2,300 hand workers, comprising 1,250 men and 200 boys, as well as 600 women and girls in workshops, and 250 women home workers. Not counting those engaged at home, who were mostly solitary workers, the average number employed in one workshop was less than four persons. The shops in which the work of file-cutting is carried on are for the most part of a rude and primitive description, poor in structure and often dilapidated. The commonest form is a low lean-to shed in the yard at the rear of a dwelling-house. Before the trade was placed under special regulations there

was usually no adequate provision for ventilation or cleanliness, the floors being of loose bricks or earth and the washing appliances being often inadequate or entirely absent. A marked improvement is now noticeable in these respects, and under more sanitary conditions the trade is taking a new lease of life, from five to six hundred shops being still in use—many being still found in the country round Sheffield, especially in the villages of Ecclesfield and Oughtibridge, as well as in the City of Sheffield itself.¹

The organization is similar to that of other trades in which out-work prevails. The workers usually employ a little assistance, although many work alone; on the other hand, a few small masters take on a number of boys, the trade rule restricting each worker to one apprentice having broken down. The heavier classes of work are performed by men only, small articles and the edges of large files being cut by women.² There are regular lists of piecework prices, the scale being common to men and women workers alike. There is no reason to anticipate a rapid disappearance of the trade, since much of the work is required in quantities too small to make it worthwhile to employ a machine, while other kinds are too trifling and tiresome for the machine to undertake.

Looking now at the cutlery trades as a whole, we must remember that during the last two generations there has been no substantial expansion of employment. Under such circumstances the transition to

¹ In 1900 the number of hand file-cutting shops under inspection in Sheffield alone was 546. Report of Medical Officer for Sheffield, p. 70.

² The adoption of this employment by women is not a recent innovation. Cf. Mather's verse (c. 1785), "'Twas Jezebel's daughter I saw chopping files."

FILE-CUTTING BY HAND: OUTWORKERS.

FILE-CUTTERS' WORKSHOPS, SHEFFIELD.

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ANNEXURE

machine methods, halting and gradual though it is, is accompanied by a redundant labour market, and is favourable to sweating. The small middleman is often able to secure trained workmen on terms which the respectable manufacturer could not imitate without provoking popular outcry and strenuous revolt. In short, the little master, by sweating his workers, can often produce common goods more cheaply than his reputable rival. On the whole, the condition of the man employed on his master's premises is uniformly superior to that of the out-worker. Employers naturally wish to attract the best and steadiest workmen as in-workers; hence, as a rule, the conditions as to deductions and supply of work are more favourable within the factory gates than outside. Not only is the employer virtually compelled to find work for his in-workers if they cannot otherwise secure it, but he also naturally dislikes seeing a rival manufacturer's work brought on to his premises for execution, though this the in-worker has, of course, a right to do if he is paying rent and is not supplied with work.

In some instances the system of out-work seems to defy the factory because of its superior advantage for the production of specialities on a small scale. This is true, for example, of the steel fork trade. No cutlery manufacturer in Sheffield manufactures his carving-forks himself. He finds it better to buy from the little master fork-maker, and to content himself with hafting them on his own premises.¹ For the production of accessories of this character, which rely almost exclusively on manual labour and skill, the factory system has few obvious advantages.

¹ Fair Wages Committee, Cd. 4423 (1908).

A specific example of the earnings of the poorer out-working cutler is worth recording, since, while taken from trade evidence of twenty years ago, it is perfectly typical of the same class of work to-day, though the numbers of such out-workers are now very greatly reduced. An out-working spring-knife cutler, working with his fourteen-year-old son, made in one week 56 dozen knives. For these he was paid 5s. 3d. per gross, fourteen dozen being counted to the gross. They worked fully 70 hours per week and sometimes 16 hours a day. From the 21s. which they received they had to expend approximately 2s. 8d. on shop rent, coal, light, files and wire, thus reducing their joint net earnings to 18s. 4d. They were thus making knives at the rate of three for one penny, and earning approximately 3d. per hour between them.¹ For grinding the blades of such cheap knives the grinder may receive as little as 1s. 3d. per gross, or 1¼d. for fourteen blades, at which rate he would be fortunate to earn 15s. a week. The finished knife may be sold for 2s. a dozen, or even less, some knives marked "warranted Sheffield" being worth only 6d. a dozen.²

Within the large factory subdivision of work is naturally carried further than in the case of solitary out-workers. In the case of the cutler or hafter this leads to team-work, which is found mainly in the factories, though it is also used by little master out-workers.³ Most of the out-workers, however, employ but one or two assistants. In the case of the table-knife hafters, for example, there are many out-workers

¹ H. of L. Committee on Sweating System, Qu. 24741.

² *Ib.*, Qu. 24980, 25121.

³ On the question of *team-work*, cf. evidence of Mr. A. J. Hobson, Poor Law Commission, 1909, Evidence, vol. viii., Qu. 88381-7.

employed by the larger firms. Usually these little master out-workers buy the forged blanks, give them out to be ground, and then haft them themselves with the help of one or two men or women. They incur no risks as to the disposal of their wares, but dispose of them to the large manufacturers, who find it preferable thus to employ them rather than to run the risk of being undersold. Clearly this form of organization is still very efficient commercially. This is equally applicable to yet another section of these little masters whose trade consists in buying up the waste products of the trade, manufacturing them into inferior articles, and then finding their own markets for these abnormally cheap and worthless goods. The teams of hafters working in the factories are usually controlled by a little master or "boss," who contracts with the firm for the work. He engages his own men, provides them with tools, and pays the rent and other charges for all. Thus the rest of the team consists of datal men engaged by the week at a net wage. The team usually consists of five men and a boy; the team master will probably make a clear profit of from 35s. to 45s. a week: the leading man must be a competent man, able to go all through the work, and he will receive a wage of about 25s.; the rest will be semi-skilled men dealing with particular parts of the work, and these may get from 18s. to 20s. a week. Probably one-third of the trade have thus become datal workers, and the proportion is certain to increase with the decay of apprenticeship.

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It is not to be wondered that the subdivision of the manifold task of the cutler or hafter among a group of co-operating workers should prove economical to the employer. Nevertheless, it reduces the

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workers to the position of semi-skilled men, unable to earn an independent livelihood, and encourages the use of boy labour. Hence there are constant complaints that the old skill is dying out with the decay of proper apprenticeship.

There is one feature of the modern system of organization which deserves special emphasis. This is the phenomenon of the reappearance of the little master and his assistants within the walls of the factory proper. We have here a striking indication not only of the tenacity, but also of the efficiency of the old industrial system under modern conditions.

Team-work is also found in some of the grinding trades, as, for example, in table-blade-grinding. The little master grinder often employs a team of two to ten men and boys at fixed wages, and occupies from three to six grinding-troughs, for the rent and equipment of which he is responsible. Sometimes he takes part in the work himself, sometimes he merely supervises. The men are "datal" men, paid by the hour, the wage varying from 22s. a week up to 35s., though the latter is exceptional. Here again the work is subdivided, and the lads never learn the whole trade properly, but are confined to one or two single processes. About two-thirds of the working table-blade-grinders are now datal men, working for from 5½d. to 6d. per hour, and half of the whole number are in-workers. In the teams performing the cheaper grades of hafting work, and also in the occupation of buffing for grinders, women are being employed to an ever increasing extent. This again is significant evidence of the tendency to substitute subdivided occupations for the all-round efficiency of the representative worker of former days.

These typical examples show that the ancient system of employment is steadily giving place to factory methods. In many branches the workers are losing their all-round skill and becoming specialized in processes which are often too simple to give their work, a satisfactory value. Out-workers are becoming less numerous, and they too are losing their ancient heritage of semi-capitalistic independence. Nevertheless, the application of purely mechanical methods advances but slowly, and the consummation of the industrial revolution is long postponed.

While no exact employment figures are obtainable, a rough indication of the extent of out-work prevailing in the cutlery trades at the present time is afforded by an inquiry made in 1912 for the purposes of the National Health Insurance Commissioners. The file trade, being scheduled under the Factory and Workshops Act, gives returns showing 1,394 out-workers employed in this way. The cutlery trades are not scheduled, but returns from 38 firms only were obtained, showing a total of 2,753 out-workers employed.¹ The total number employed must still be far in excess of these figures. Further indications may be derived from the Census of Production (1907), which enables us to measure the value of the production of such out-workers as are sub-occupiers of tenement factories in the Sheffield district. The returns show that the value of steel cutlery wares manufactured for direct sale by these out-workers was £105,000, in addition to which the sum of £119,000 represented work done for other firms—a total of £224,000. In other allied trades

¹ Out-workers Committee, Cd. 6178, 1912.

the value of goods thus made for sale was as follows : files and rasps, £32,000 ; saws and machine-knives, £9,000 ; edge-tools, £34,000 ; and in addition to these totals there was a larger amount of work executed for other firms on materials given out by them.¹

λ The chief reason for the slowness with which these ancient features disappear—which will, indeed, prevent their dying out altogether for a long time to come—is to be found in the immense variety of type and design, which determines the sale of articles which are of the nature of luxuries, and in which custom, taste, and personal idiosyncrasy are determining factors, so that a pocket-knife, for instance, which sells with a horn handle in one district must be supplied with a bone or wooden handle in another. This makes standardization difficult, if not impossible, and compels the production of goods in such small quantities as to render the adaptation of machinery a matter of great difficulty.

¹ Census of Production, Cd. 5254.

CHAPTER VIII

EARNINGS AND EMPLOYMENT

I. WAGES.

It is impossible to give any precise and satisfactory account of the progress of wages over a long period in the numerous subdivisions of the cutlery trade. By piecing together the scattered and fragmentary data which are available some idea of the prevailing rates may indeed be obtained, but even these will be found vague and inadequate. The obstacles to such an investigation are sufficiently obvious. In the first place, in a scattered and semi-domestic industry in which great variations prevail both in the quality of the work and the skill of the workers, the range of actual earnings must be very wide. The statement, for example, that the wages of spring-knife cutlers at a particular time (1859) are for the best workers from 30s. to 40s. and for inferior work from 12s. to 16s., with an average of from 16s. to 25s., is probably as near an approximation as we can get. Quotations of earnings given by individual workers will usually apply only to a particular grade of work. On the other hand, it is equally unsatisfactory to attempt to compile statistics of earnings from the payments recorded by employers in bygone times. These latter are at best inconclusive, owing to the fact that the typical em-

ployee was an out-worker, and was accustomed to obtain employment from several firms simultaneously. Still more generally such records give an exaggerated idea of net individual wages, since a single payment must as often as not represent the earnings of assistant workers engaged by the employee, and—even where this is not the case—there is usually a wide margin between gross and net earnings, owing to the necessary outlay for tools, materials, and the rent of the workplace.¹ Finally, when returns are obtained from employers of wages actually paid to their own employees working on their premises, the rates are commonly not representative of true individual net earnings, since the firm takes no official cognizance either of payments made to a boy or striker employed by the worker or of the necessary deductions for tools, etc.

Bearing these qualifications in mind, the particulars given opposite, which are based on contemporary evidence, may be taken as giving a reliable indication of the average limits of actual earnings at different periods in the principal branches of the trade.

It will be seen from the table that very few of the workers have ever been able to command unusual or extravagant wages, and that on the whole the average standard of earnings has been a low one in relation to the degree of skilled workmanship involved. The explanation of this is probably to be found in the fact that the work, while skilled, is in many cases not particularly strenuous, and does not demand exceptional physique. Consequently, apart from the necessary length of training and trade union restrictions,

¹ Cf. Royal Commission on Depression of Trade, 2nd Report, Part I, Qu. 1168.

AVERAGE LIMITS OF ACTUAL EARNINGS IN SHEFFIELD CUTLERY TRADES.

| | 1833. | 1850. | 1871. | 1889. | 1910. |
|----------------------------|--------|-------|-------|-------|-------|
| | s. | s. | s. | s. | s. |
| <i>Table Knife Trade—</i> | | | | | |
| Forgers... .. | 21-35 | 27-40 | 28-36 | — | 30-60 |
| Grinders | 27-40 | 27-32 | 24-30 | 21-27 | 20-35 |
| Hafters... .. | 18-27 | 17-27 | 21-24 | 14-30 | 18-40 |
| <i>Spring Knife Trade—</i> | | | | | |
| Forgers... .. | 21-31 | 18-35 | 22-38 | 25-32 | 28-40 |
| Grinders | 20-40 | 20-40 | 30-36 | 18-28 | 18-38 |
| Cutlers | 15-25 | 16-30 | 18-30 | 12-20 | 16-40 |
| <i>Razor Trade—</i> | | | | | |
| Forgers... .. | 26-30 | 24-33 | 25-40 | — | 35-50 |
| Grinders | 18-50 | 21-48 | 35-40 | 25-50 | 30-60 |
| Setters-in | 18-40 | 15-30 | 18-26 | 25-30 | 18-38 |
| <i>Scissors Trade—</i> | | | | | |
| Forgers... .. | 23 | 28 | 20-32 | 24-34 | 28-35 |
| Grinders | 35 | 35 | 25-36 | 30-40 | 28-40 |
| Workboard hands | 26 | 24 | 21-33 | 25-35 | 25-35 |
| <i>File Trade—</i> | | | | | |
| Forgers... .. | — | 24-40 | 28-37 | 25-35 | 25-30 |
| Grinders | 35-45 | 27-35 | 36-41 | 28-40 | 30-35 |
| Cutters | 18-25 | 20-30 | 20-24 | 16-25 | 25-40 |
| Hardeners | — | 18-28 | 27-32 | 22-28 | 24-27 |
| <i>Saw Trade—</i> | | | | | |
| Makers... .. | 30-40 | 28-35 | 25-35 | 30-45 | 30-40 |
| Grinders | 70-100 | 40-60 | 30-50 | 30-45 | 35-45 |
| Handle-makers | 25-40 | 24-30 | 25-35 | 28-35 | 28-32 |

there is no special obstacle to an abundant labour supply. It is true that in the first half of the nineteenth century the trade unions often exercised a real controlling influence over the entrance to the trade ; but even so their influence on wages was intermittent rather than continuous. They constantly succeeded in securing a high scale of piece-work prices in times of exceptional trade activity, only to lose it again on the return to normal or depressed conditions, when they found themselves compelled to concede discounts from what they naturally enough regarded as the proper standard of payment. This is why so many

branches of the trades still found their claim to higher wages on the rates obtained long ago, some lists which are still appealed to, such as that of the spring-knife cutlers, going back to the exceptional year 1810. Moreover, there have always been peculiar obstacles to the rigid enforcement of a trade union standard, in consequence of the poverty, not only of the workers themselves, but also of their masters. Furthermore, the dispersal of the trades through a multitude of small workshops robbed the men of that stimulus to industrial solidarity which congregation in a few large establishments affords. Each semi-solitary worker was exposed to a strong temptation in slack times to concede the maximum discount to his employer, and so underbid those who clung to the customary prices. The employer, in his turn, was not slow to use such concessions as a lever against the whole body of associated workers by producing evidence that he was able to get the work done at the reduced rate.

For the last two generations other influences have been at work. There has been no rapid expansion of the numbers employed; indeed, the trades have been chronically overmanned, except in periods of exceptional trade activity. Consequently wage-rates have normally been low and inelastic. Furthermore, the transition to machine methods of production has steadily weakened the hold over the trade which the workers were able to maintain in earlier times by reason of their monopoly of skill. The advent of machinery has to some extent lowered the standard of ability demanded from the great body of the workers; and thus the prospect of a material revival of earnings is not a bright one.

II. THE CONTRACT FOR SERVICE.

The traditional period of hiring in the cutlery trades has always been one month, and that interval has therefore been legally requisite in case of a notice for determining a contract of service, whether given by employer or workman. This custom has of course a twofold influence: it increases the permanence of employment, and thus is advantageous alike to the worker and his employer; but it also diminishes the mobility of the labour supply as compared with a system of short-term engagements. Perhaps its most important effect lies in the discouragement of sporadic and unpremeditated strikes, since it prohibits the workmen from leaving their employment, or from being dismissed, on the spur of the moment whenever a dispute occurs. A few examples may be quoted to illustrate its working in past times. A strike of blade-forgers in a particular firm in 1824 was met by the employer by a prosecution for leaving work without notice. The defence was that a circular letter demanding an increased scale of payment had been delivered to the master, but the magistrate held that this did not amount to a notice,¹ and that the accused must pay costs and return to work.² In the converse case of dismissal without notice, when a sudden lock-out took

¹ A good example of a dispute in which this same question was made one of the crucial points at issue will be found in the case of the prolonged strike among the Black Country chainmakers in 1859-60, in which case an appeal from the magistrates' decision was carried to the Queen's Bench ("Trade Societies and Strikes," Social Science Association, p. 154).

² *Sheffield Iris*, October 19, 1824. Cf. *Sheffield Independent*, July 27, 1833; September 19, October 31, November 14, 1835. *Iris*, February 19, September 3, 1839.

place, the workers were usually successful in recovering wages for lost time from the master.¹ This, however, was not always the case, for, as one of the magistrates stated in 1836, the masters often appealed against such an order to pay, not on any good grounds, but with a view to compelling the workman to abandon the action.²

The interpretation of the contract for service as an engagement necessitating four weeks' notice to terminate it is now so firmly established, both by traditional usage and also by the strong approval of both masters and men, that cases of difficulty and misunderstanding arising from this usage are now very infrequent.

III. DEDUCTIONS FROM WAGES.

The chief causes of industrial friction under the domestic system of production arise from the semi-proprietary character of the worker's task. He is, as we have seen, midway between the handicraftsman and the simple wage-earner, receiving as his share of the earnings neither the total value of the product nor a definitely determined net wage, but rather a gross sum from which has to be deducted compensation for his necessary incidental expenditure on account both of tools and materials provided by himself, and also the cost of shop-room, power, and working appliances which he is obliged to hire. Moreover, where the worker is accustomed to purchase or hire from his employer either materials or tools, there exists a natural temptation for the latter to make payment in goods

¹ See *Sheffield Iris*, February 16, 1836.

² *Ib.*, May 3, 1836.

rather than in cash, and thus a widespread use of the truck or "stuffing" system is commonly associated with this form of industry. Though the problems of deductions and of truck are quite distinct issues they are nevertheless somewhat closely related, since both are involved in the practical determination of net wages. There is a further difficulty which commonly arises, namely, the liability to fraud and disagreement, in consequence of the workers' temptation to embezzle materials supplied for his work which are not actually used by him in the performance of his allotted task. It is, therefore, not surprising to find that much of the industrial legislation of the eighteenth century had as its object, together with the repression of combinations of journeymen, the punishment of embezzlement and the insistence on cash payments. A lengthy series of statutes was aimed at these abuses in the textile and leather trades, prescribing that all payment for work done should be by the lawful coin of the realm and not by means of cloth, victuals, or commodities in lieu thereof.¹ It was not, however, until 1817² that similar provisions were extended to workers in the cutlery trades, and effective protection was not assured until the general prohibition of truck payments in any trade in 1831.³

In the cutlery trades the widespread evil of the truck or "stuffing system" of payment in kind had been an abuse of old standing and of formidable extent. It had risen into prominence in the seven-

¹ See particularly 1 Anne, Stat. 2, c. 18 (1702); 10 Anne, c. 16 (1711); 12 Geo. I, c. 34 (1725); 13 Geo. II, c. 8 (1740); 22 Geo. II, c. 27 (1749).

² 57 Geo. III, c. 115 (1817).

³ 1 and 2 Will. IV, c. 36, 37 (1831).

teenth century, and though periodically efforts were made to repress the custom it constantly broke out afresh. We have already referred to the attempt made by the Cutlers' Company to mitigate the practice in 1680 and 1734.¹ In 1756, so great was the popular indignation against the abuse of payment in "half stuff" that serious rioting took place in the town.² The rise of the trade societies or unions among the journeymen may even have intensified the evil, for, as one master writes in 1814: "If the men charge double what is proper for their labour, a master may perhaps justify himself by saying that he in self-defence is compelled to pay them, not in money, but in coffee, cloth, etc., for which he charges double or treble its value."³ This system, however, by which payment of wages was made in coffee at 7s. 6d. per lb., which was worth only 2s. 6d., while 10s. 6d. worth of cloth was put off for 21s. in wages, naturally resulted in fierce quarrels with the unions, whose members were being thus compelled to sell their work at a loss. Many of the price-lists for work sanctioned during the period 1810-20 contain protests against the truck system. In many agreements there is laid down the definite condition, "All wages to be paid in money," or, "No article whatever to be put off instead of money," showing that the hardships of the practice were keenly resented.

The practice of truck is so clearly indefensible that it is only surprising that it should ever have become established or countenanced by fair-minded employers. The abuse, however, was not a new

¹ See pp. 117, 118.

² *Leader*, "History of the Cutlers' Company," i. 165.

³ T. A. Ward, "Diary," 217.

custom deliberately imposed, but simply the outcome of a confused method of wage-bargaining distorted in favour of unscrupulous merchants.

There is abundant evidence of the hardships inflicted on the cutlery workers by the above practices, especially in periods of industrial depression. For example, a master in 1820 speaks of the "stuff system" as the greatest evil under which the trade is suffering, though on the same occasion another master publicly avowed that it had always formed a part of his own business, and that he would assuredly continue to carry it on in future.¹ Certainly the practice was slow in dying out, and it was not uncommon even in 1843 for wages to be paid partly in steel, linen cloth, and other goods. Indeed, so prevalent was the custom that it then elicited a public warning from the Master Cutler.²

So far, the issue is a simple one, but it is far less easy to settle satisfactorily the vexed question of deductions from wages. The well-nigh universal¹ custom in the Sheffield trades has been for the forger to pay rent for his "hearth," the grinder for his "trough," and the cutler for his "side," and the custom has obstinately survived in some branches down to the present day, though the majority of workers are now employed on their master's premises and utilize his appliances. A close parallel may be found in the woollen trade, where the practice of hiring out looms by masters was common from the sixteenth century onwards, and where deductions of 2s. to 3s. from weekly wages on this account were customary down to the middle of last century, even when the work

¹ *Sheffield Iris*, March 15, 1820.

² *Ib.*, February 8, June 10, 1843.

was done in the employer's factory.¹ So again, the history of the frame-work knitting industry—where frame rents were customary from the beginning of the eighteenth century onwards—abounds with examples of the difficulties arising from the system. The frame rent varied from 9d. to 3s. a week, but other deductions were sometimes made for fire and light, standing, winding, needles, fetching and carrying, and the like.²

The legality of such deductions, one and all, is apt to be called in question by the workmen, though as regards rent charges of the above character it has never been successfully disputed. The Truck Act of 1831, while enacting that all wages should be actually paid in the current coin of the realm, specifically permitted stoppages of wages in respect of the lease of the whole or part of a tenement to an employee under written agreement. Ruling cases have further established the principle that the provision of facilities for performing work may be made the basis of deductions, and under this rule it appears that the cost of machine rent, and charges for power, gas, shop-room, and the like, may legally be stopped out of gross wages. Even a fine for bad work has been ruled to be a non-payment of wages rather than a deduction from wages coming under the Acts.³ So again an agreed discount from a price-list or wage-scale is not a deduction from wages due ; nor is a fixed deduction for waste ; nor a customary count, such as the reckoning of fourteen articles as a dozen ; nor discounts for

¹ Handloom Weavers Commission, 1840. Reports of Assistant Commissioners, Part II, 389 ; Part III, 527.

² Felkin, "History of Hosiery," 455-7.

(³ Report of Committee on the Truck Acts, Cd. 4442 (1908).)

the supply of accessories by the employer, such as polishing materials. Very large and material exceptions to the principle of net cash wage-payment have thus been recognized as legitimate, and many of the ancient difficulties and grievances have been unaffected by legislation. For most of them trade custom has been held to be a sufficient sanction, and thus antiquated provisions have been allowed to persist unchecked. But beyond these limitations there are many forms of wage deduction either excessive or directly illegal which the Acts have failed to check, at all events in the cutlery trade. In view of this fact, the Parliamentary Committee which examined the question in 1908 strongly recommended the prohibition of the traditional system of deductions in these trades, and the substitution for it of a system of net wages, such as was introduced in the hosiery trade as long ago as 1874, since which time all frame rents for knitting machines supplied to workmen have been abolished.

The indebtedness of a workman to his master on account of trough rent and the like encouraged the occasional adoption of the highly objectionable practice of "pawning" workmen, which has at times prevailed extensively in the grinding and other branches. We find it thus described in 1854:

"A clever, but probably dissipated man—a good file-cutter, for instance—contrives to get into debt to his master to the extent of five pounds. Then, finding some other person willing to employ him, he pawns himself to that person for the five pounds which he owes, and an additional sum of probably five pounds more; afterwards changing his employment again and again, as long as he can obtain an additional advance as an inducement to leave his employer. In this way we believe that many of the cleverest workmen in Sheffield are, or were, in a state of quasi-bondage to

their employers for advances which are generally spent in riot and dissipation. Of course, the result is that the man finally absconds, and the last employer loses his money."¹

The evils of such a practice are sufficiently obvious without further comment.

— A closer consideration of deductions from wages as they arise in the practice of the cutlery trade will show how strong a hold is still retained by customs which belong more properly to a simple domestic system of production than to a modern factory organization.

We may consider first a form of deduction which, though in reality merely nominal, is suggestive of extortion, and is the cause of chronic irritation. This is the practice of counting more than twelve articles to a dozen. Now, whether or not this custom actually arose in the various branches of the trade through the abuse of power exercised by unscrupulous masters in times of depression, at the present time it has, at all events, the sanction of ancient usage. Moreover, whatever its origin, it has some practical justification as a method of guaranteeing the manufacturer against defective articles and broken dozens. When an order is received for a small quantity of a particular knife which is not kept in stock, or which has to be supplied afresh in order to stamp the goods with the customer's name, it will presumably be advantageous to the manufacturer to have them made in bakers' dozens, rather than risk delay in the completion of an order until he has replaced a few imperfect articles. The question at issue, however, is not whether extra articles should be made, but at whose expense it should be done; and since it is the practice of the trade that if an article is rejected on account of imper-

¹ *Sheffield Independent*, June 17, 1854.

fection, however slight, it is obligatory on the work-man to replace it (receiving the usual materials, but giving his time) and thus complete his full count of perfect articles, it is natural that he should find the master's justification for the practice somewhat inadequate. The usual counts to-day are thirteen to the dozen in files ; thirteen and a half to the dozen in table-knives ; fourteen to the dozen in scissors and razors ; sometimes twelve and sometimes fourteen to the dozen in pocket-knives.¹ In every case the articles are sold by the manufacturer in bare dozens. This whole question, however, only attains practical importance when the usual count is varied or manipulated in the interest of one party or the other.

A far more important form of deduction is found in the surviving practice of exacting payment from the worker for space and power and similar purposes, a custom which commonly makes the margin between gross and net earnings a wide one. The most prominent instance to-day is found in the charge for trough rent incurred by the grinder, this being still the customary plan in most of the grinding trades. An exception is found in the case of the edge-tool-grinders, who succeeded in throwing off this obligation about forty years ago, and have since received net wages without deduction, based on a price-list drawn up in 1872. The

¹ Truck Acts Committee, Cd. 4444, Qu. 12500, 997. A parallel may be found in the cutlery trade of Thiers, where traditional usage compels the cutler to make thirteen knives to the dozen. (C. Pagé, "La Coutellerie," vol. ii. 272.) This same practice, of course, obtains also in other trades. Cf., for example, the nail trade, where 1,000 means now 1,150 and formerly 1,200. Again, we have the familiar and proverbial "baker's dozen," the antiquity of which is shown by a decree of the Star Chamber in 1633, "that Bakers sell not at 14, 15 or 16 to the Dozen."

wool-shear-grinders and the scythe-grinders have also abolished wheel rent in nearly all cases, and in many firms the file-grinders work at net prices, calculated by allowing a discount of $33\frac{1}{3}$ per cent. from the standard price-list. In other trades, however, such as the pen and pocket blade-grinders, the table-blade-grinders, the razor-grinders, and the majority of the file-grinders, a deduction for trough rent is still customary, even when the grinder is working on the employer's premises. The usual charge, which runs for about fifty weeks in the year, whether work is available or not, is from 3s. to 5s. in the light trades, and from 5s. 6d. to 8s. in the heavier branches, or on an average from 4s. to 7s. a week. In table-blade-grinding, for example, which may be taken to illustrate the methods of the grinding trades, the most usual rent for a trough is about 7s. per week. This charge provides merely shop-room and power for one week of fifty-four hours. The grindstone and glazing-wheels, the "horsing" or seat on which the grinder works, the wheel-bands and other fittings, are the property of the grinder, the equipment for each trough costing about £10 when new. A stone four feet high alone is worth two guineas. When tools are provided by the employer, as is occasionally done, the grinder's rent is increased to about 10s. 6d. per week. In addition to this, a grinder is generally charged 4d. a week for gas from October to March. In table-blade-grinding it is necessary to hire a second trough, on account of the six stages through which the work passes and the two wet stones employed. Hence a man can only work single-handed where tools are found for him, and where he is allowed to take his work in succession to the various stones and glazers. Usually, there-

fore, a table-blade-grinder rents at least two troughs, and employs one or, possibly, two men, and perhaps a boy. He will thus have to pay about 14s. a week as rent, whether he has full work or half work or no work at all. Even when he is sick his rent runs on, for the space is reserved for him and the engine is running.¹ Hence there is a strong temptation to accept less than the standard prices when trade is bad. In any case the liability is a heavy one for a man without capital. The charge for gas runs for six months of the year—from October to March. In most trades the rate is 4d. per week per light, but the charge to saw-makers, edge-tool-forgers, file-forgers and file-grinders is 6d. a week, while file-cutters pay 3d. or 4d. only.

In the forging department deductions are less important, and in the case of the in-workers hearth-room, coke, and tools are usually supplied by the employer, the gas charge alone being deducted. The single-handed file-forgers, however, pays 6d. a week for coke, and the edge-tool-forgers from 6d. to 1s., according to the nature of his work.² The out-working blade-forgers, whose numbers are no longer great, receive an addition to the regular list prices to cover their additional expenditure, the regular allowance being 6d. per "daywork."³ In the cutlers' branch of the work, on the other hand, while in-workers have most of their tools found by the firm, it is the usual practice

¹ See, for example, a case in which a pen-blade-grinder was charged rent for a second trough, on which he had previously employed a datal man, even when the man had left him, and no work was given out for a second trough.—*Sheffield Daily Telegraph*, March 29, 1907.

² Truck Acts Committee, Cd. 4444, Qu. 12602.

³ See below, p. 290.

to pay rent for a "side," *i.e.*, bench-room ; this charge varies between 6d. and 2s. a week, according to the accommodation required. The average payment in this case is about 1s. per week, with an additional 4d. for gas. This applies not only to table-knife and spring-knife cutlers, but also to scissors "putters in" and razor "setters in." A table-knife-hafter, for example, according to the usual custom of the trade, will thus pay side rent for space occupied, provide his own tools, and pay the regular gas charge as well. The side rent entitles him to the small amount of power required for drills and glazing-wheels, and to the occasional use of a hearth for minor operations, such as tempering or annealing.

Clearly these deductions, though deeply rooted in custom and tradition, are out of place under the factory form of organization to which the cutlery trades are slowly changing. Their disappearance in any case is only a matter of time, and since the ultimate salvation of the trade requires the adoption of newer machine methods of production, the introduction of a net wage system for in-workers in all branches appears highly desirable. The employer would gain from the greater efficiency of the work, the workers from the greater regularity of employment which might be expected to result. For example, in the case of a grinding-wheel in the employer's factory a substantial share of the standing charges is paid by the men whether full work is provided for them or not. While this secures the proprietor against loss, it clearly represents a burden on the trade to the full extent of the waste of power and excessive running expenses incurred. At present the grinders claim not unnaturally that the master makes a double profit out

of them, first as owner of the wheel and again as the employer of their labour. A calculation by an important firm, however, showed that in this case, at all events, the grinding-wheel was barely remunerative as a distinct power-providing enterprise. That is to say that when rent, repairs, and 5 per cent. interest on plant were charged against the trough rents received from grinders there was only a narrow surplus on the average of six years' working.¹ There is no doubt, moreover, that among the larger manufacturers there has been a feeling that it is more economical to employ out-workers than to provide an up-to-date grinding-wheel. A net wage system, however, might fairly be expected to result in a more efficient and less wasteful utilization of power and plant. The greater regularity of work would imply a loss to the grinder in busy times, for then, under the present system, he makes a profit out of his tools ; but this would be more than compensated by the abolition of the liability to serious loss when trade is poor.

While the net wage system is slow in establishing itself, the insecurity of the worker's position in times of depressed trade is not always so serious as might be inferred from the above account. Clearly it would be impossible for a man without capital to sustain for any length of time the heavy running charges for wheel rent and the like, if he were precluded from obtaining work. In the case of in-workers it is clearly in the interest of the employer that he should secure at least such an amount of regular work as will enable him to continue his payment of wheel rent, etc. It has thus been a fairly common practice among the larger manufacturers to fix a definite "stint" or minimum

¹ Truck Acts Committee, Cd. 4444, Qu. 12409.

allowance of work when trade is bad. This applies especially to the forgers and the grinders, and less commonly to the cutlers. What is virtually a minimum wage is thus set, the scale varying with the several occupations, as, for example, 27s. a week for grinders, 25s. a week for forgers, and 23s. a week for cutlers. The out-worker, however, has, as a rule, no similar security.¹

¹ Truck Acts Committee, Cd. 4444, Qu. 12456-8.

CHAPTER IX

THE HEALTH OF THE WORKERS

THROUGHOUT the nineteenth century the question of the industrial mortality of the cutlery workers was repeatedly investigated; but though public attention was thus attracted to the urgency of the problem from time to time, this publicity did not result in any efficient or radical reform down to a comparatively recent date.

In the earlier days of the cutlery industry, when the occupation was probably more irregular and intermittent than under the modern system, and alternated with periods of activity in agricultural pursuits, there is no reason to suppose that the health of the cutlery workers was markedly inferior to that of the population in general. But with the increasing concentration and specialization of the industry came a steady accentuation of the deleterious influences to which the operatives were exposed, and these evils have assumed such proportions that stringent sanitary regulations have now been imposed on the trade in respect to certain processes, in order to diminish the incidental danger to health. The trades which are thus recognized as involving a peculiar liability to industrial accident and disease are the various grinding branches, the occupation of file-cutting, and to a less extent the work of the cutter and hafter.

In the grinding trades there is, first of all, a perennial danger that a grindstone, containing concealed defects, or from other causes, may burst when revolving at high speed, in which event not only the operator immediately concerned but also other workers in his vicinity—and especially any person standing in front of his grindstone—is liable to sustain serious or fatal injury. For many generations the grinder himself has sought protection by working astride upon a massive wooden saddle, or “horsing,” chained down to the iron trough or to the brickwork of the floor with heavy chains, a device which was introduced about 1750.¹ But while the main danger is thus reduced to that of injury from a stone flying forwards, complete protection is by no means guaranteed, as is proved by a long record of serious accidents. In 1895 the running of a grindstone before a fireplace was prohibited,² and more stringent regulations designed to mitigate this danger have since been put into force: these have proved most beneficial, and have greatly diminished the number of fatal accidents.

A more serious, because more general and insidious, danger to the health of the grinder is found in the inhalation of the dust created by the operation known as “dry grinding.” The gravity of this danger has been common knowledge for a hundred years, but to devise and apply an effective remedy was a task not easy of accomplishment. In 1823 an invention known as the Grinders’ Life Preserver was tested. It consisted of an inhaler for intercepting dust and was thus “calculated to diminish grinders’ asthma”; but this

¹ A. Young’s “Tour,” i. 122. See also illustrations above.

² Factory and Workshop Act, 1895. Seventh Regulation of Schedule 1.

device proved neither suitable nor acceptable to the worker.¹ In 1824, as the result of the efforts of Dr. Knight in Sheffield,² and by the assistance of the London Society for Bettering the Condition of the Poor, premiums were offered for the best invention or improvement of an apparatus for preventing lung diseases among grinders, and a year later William Calton received ten guineas and Peter Redfern eight pounds as rewards for applications of the fan and air-duct method of removing the dust created by grinding.³

Twenty years later the dust crusade was being vigorously prosecuted under the leadership of Dr. G. Calvert Holland, whose researches and writings, especially "The Mortality, Sufferings, and Diseases of Grinders" (1842), "The Diseases of the Lungs from Mechanical Causes" (1843), and "The Vital Statistics of Sheffield" (1843), formed a most important contribution to the scientific knowledge of the problem. This work was afterwards carried still further by Dr. J. C. Hall, whose book on "The Sheffield Grinders' Disease" appeared in 1857. Dr. Holland did not confine his efforts to published statements, but organized a practical campaign among the grinders themselves, securing the co-operation of the trade leaders in a plan for "the better ventilation of grinding-wheels through the medium of an apparatus called a dust machine," and also promoted the proper cleansing of work-places.⁴ The campaign was so vigorously prosecuted that the proprietors of

¹ *Sheffield Iris*, December 30, 1823.

² See his contributions *re* "Grinders' Diseases in the North of England," *Medical and Surgical Journal*, 1834 (Nos. 1 and 2).

³ *Sheffield Iris*, September 14, 1824; August 19, 1825.

⁴ *Ib.* March 14, 1844.

the steam grinding-wheels were stimulated to form a counter-organization known as the Millowners' Association, which jealously opposed the demand for structural and other improvements required for the purpose of securing improved ventilation.¹

The necessity for providing suction pipes fitted with fans for drawing away the deleterious dust gradually won general recognition, and by 1865 the employment of these was fairly common, although, owing to careless handling and defective design, the appliances were usually ineffective. Under the Factory Act of 1878 a serious attempt was made to insist on their use, but still the difficulty of enforcement and ambiguity as to the apportionment of liability rendered the regulations little better than nugatory. In 1895 the responsibility for the installation of pipes was definitely placed on the proprietor of the workshop, leaving to the operative the provision of the fan. This clear division of responsibility resulted in material improvement, but still the administrative difficulties hampered the enforcement of the Act, especially in tenement factories. The ducts were commonly of unsuitable design, discharging into the open air in the neighbourhood of the window, whence the dust was carried back into the shop. There was, moreover, no effective obligation on the workman to provide a fan of real efficiency, or even to use it and keep it in order. Hence the unsatisfactory conditions were but little modified, until, after careful inquiry, fresh special regulations of a comprehensive character were imposed on the dry grinding trades in 1909-10 under the provisions of the Factory and Workshop Act of 1901. These regulations provided for the employ-

¹ *Sheffield Independent*, January 21, March 4, 1854.

ment of hoods, ducts, and fans to intercept and draw off the dust created in ordinary grinding operations, the mitigation of the dust nuisance produced by the "racing" or periodical trimming of the grindstone, and the proper cleansing of the workrooms and appliances.

The need for such regulation will be readily established by a glance at the trade mortality. Take, for example, the trade of steel-fork grinding, where the dry process has to be employed for the removal of a substantial proportion of the weight of the rough article. As long ago as 1830-40 it was found that no less than four-fifths of the deaths occurring among this class of workers fell between the ages of twenty and thirty-nine years, while for the population as a whole less than one-third of the deaths fell within this period of life.¹ Many fork-grinders were cut off before the age of thirty. Indeed, a fork-grinder twenty-six years old "reckoned that in about two years more at his own trade he might begin to think of dropping off his perch." Dr. J. C. Hall found in 1857 that one-fourth of the fork-grinders were dying every four years. They were commonly said to "go off like dyke water, so quick." Their trade, indeed, robbed them of twenty-five years of life.²

Other branches were little better. In 1865 investigation showed that the average age among scissors-grinders was 32 years, among edge tool and wool-shear grinders 33 years, among table-knife-grinders 35 years, while out of 290 razor-grinders then working only 21 had reached 50 years of age.³

¹ G. C. Holland, "Vital Statistics."

² J. C. Hall, "The Sheffield Grinders' Disease," 1857.

³ J. C. Hall, "The Trades of Sheffield as Influencing Life and Health," 1865.

The highly injurious effect of the latter trade upon those employed in it may be gathered from the fact that a dozen razors will lose rather more than 5 oz. during grinding, and this fine dust, together with the particles from the grindstone, is liable to be inhaled by the grinder. Out of 40 grinders working in a particular wheel in 1895 only 10 were living in 1907, the deaths of 25 of the original number being traced directly to the trade disease.¹ Indeed, so serious were the hindrances to the introduction of healthier working conditions that up to the time when the new regulations came into force the death-rate from phthisis among grinders was six times as high as among the general population of Sheffield, and more than twice as high among the cutlers. Measured in another way, the mortality records of twenty years establish the fact that about one-half of the deaths among grinders were due to this one cause, whereas among the male population of the city as a whole the proportion was only one-sixth.² Fortunately, apart from the trade mortality, Sheffield is an exceptionally healthy city as regards consumption, and the Home Office regulations, assisted by these favourable conditions, are already producing a marked improvement.

In the file-cutting trade, which has acquired a reputation as sinister as that of the grinding industry, the specific and characteristic danger is that of lead-poisoning, which arises from the custom

¹ *Sheffield Daily Telegraph*, July 11, 1907.

² Average mortality in Sheffield from phthisis among males over 20 years of age, 1888-1907. Deaths from phthisis per cent. of total deaths—grinders, 41·1 per cent—all males, 16·5 per cent. See also Appendix X.

of resting the file while it is being cut upon a block of lead. For the last half-century the serious liability to impaired health on the part of the file-cutter has been fully recognized, and the trade has been notoriously one in which the sickness and mortality rates are unduly high. As long ago as 1865 Dr. J. C. Hall emphasized the need for preventive measures, and pointed out that the remedies required were of the simplest possible character. "The means of prevention may be considered too simple or trifling; but by these, and by a free use of soap and water, how much of pain, of sorrow, and of wretchedness might the file-cutters of Sheffield avoid."¹ Nevertheless, until towards the close of the century, no serious effort was made to remedy the evil or to improve the condition of the workers. In a lecture in 1893 Dr. Sinclair White emphasized the extent of the ill-effects caused by the lead-bed, not only as manifested in definite forms of lead-poisoning but no less in the minor ailments which accompany the slow incipient stages of the malady. He then showed that of one hundred file-cutters taken at random whose average age was thirty-seven years, seventy-four showed a lead line on the gum.² Moreover, by universal consent it was exceptional to find a robust file-cutter. Some improvement was, however, effected by the better standard of ventilation set by the Factory Act of 1891, and in 1898 a Departmental Committee on dangerous trades investigated

¹ J. C. Hall, "The Trades of Sheffield."

² Dangerous Trades Committee, Fourth Report, 1899, Cd. 9420, p. 27. See also Report of Medical Officer of Health for Sheffield, 1900.

the conditions then obtaining, and recommended the placing of the trade under special regulations. This was finally effected in 1902, the prescribed rules being devised with the object of enforcing an improvement in the ventilation and cleanliness of work-places, and in the personal cleanliness of the workers, exemptions being, however, permitted where lead blocks were not employed. Simple as were these provisions, they aroused vehement protests; the reason for this being the conviction that the expense involved would seriously hamper an industry which was already fighting a losing battle against machinery, and that it would result in depriving many poor workers of their livelihood. The actual outcome did not justify these pessimistic forebodings. Many of the most insanitary shops were, however, closed, while a large number of women deserted the workshops and took to homework, that being outside the scope of the regulations and exempt from inspection. In other cases exemption was obtained by the abandonment of the lead block in favour of tin and other substitutes, though this has only proved practicable in the case of small work. The result has thus been to make a material improvement in the general healthfulness of the working conditions, though at the cost of some hardship to the workers.

CHAPTER X

THE EARLY DAYS OF TRADE-UNIONISM IN SHEFFIELD

THE story of the development of trade-unionism in the cutlery industry is not merely interesting as reflecting the general progress of labour organization: it has a special importance by reason of both the unusual vigour of the movement in Sheffield during the period before trade-unionism had won legal recognition, the early date of its spontaneous beginnings, and the sporadic attempts at federal union to which it gave rise. In an earlier chapter we have noted the existence of separate associations of journeymen within the gild organization of the fourteenth and fifteenth centuries, and saw that these gradually became representative of the small traders and masters—the middle class of the industry—rather than of the serving-men, or journeymen proper.¹ There seems to be little clear evidence of organization among the journeymen, as such, during the sixteenth and seventeenth centuries, and it is not until the opening of the eighteenth century that we find the genesis of the modern form of labour association. In Sheffield, by this time, the trend of events had gradually reduced the cutlery workers

¹ Above, p. 11.

to the status of men hired by the wealthier factors to work up the materials with which they were supplied, and had deprived them of all share in the control of the Company to which their interests had been entrusted. The way was thus prepared for the coming of Trade Unionism—the natural outcome of a class separation which became more and more pronounced as the century advanced. Before the end of the century the development of the industry was producing a steady increase in the number of the larger establishments, and the rank and file of the workers found themselves confronted by a growing class of large merchants and manufacturers. Naturally enough there arose a tendency among the men to look to combination among themselves as the best means of winning industrial salvation; this they hoped to attain by regaining some measure of control over the determination of the conditions of their work, and by preserving the prescriptive rights of their fellowship.

The Sheffield cutlers' societies cannot claim absolute priority in this movement. The earliest records of successful combination belong rather to textile workers. Thus the felt-makers' clubs conducted a successful agitation for improved conditions as early as 1696-9.¹ Again, the activities of the journeymen tailors' clubs in London and elsewhere in 1720, when they were vigorously agitating for higher wages and shorter hours, gave rise to a special statute, which, in settlement of a long-standing dispute, awarded them a daily wage of 2s. in summer and 1s. 8d. in winter for a working day of thirteen hours. Future attempts to advance wages

¹ Unwin, "Gilds of London," 350.

and lessen hours of work by combination were by the same statute strictly prohibited.¹ This agitation was not, however, confined to the metropolitan tailors, for their Sheffield brethren were also organized and infused with a militant spirit. This same year (1720) the members of this club pledged themselves "not at any time hereafter to work abroad for any persons whatsoever in their houses longer than six o'clock in the evening, nor begin before six o'clock in the morning, upon any account, occasion, or pretence whatever, under the penalty of a sum of 5s. of current money of Great Britain for each offence proved on the credible testimony of two witnesses."²

Similar activities among the weavers and wool-combers of the West Country, in 1725, led Parliament to intervene a second time, and to enact a statute designed to suppress the journeymen's clubs in the woollen industry, to prohibit combinations, and at the same time to mitigate the evils of the truck system, which were a principal cause of the unrest.³ The preamble of the Act speaks of the conflict as a novel development—a fact which suggests that the strength of the movement was unprecedented:

"Whereas great numbers of weavers and others concerned in the woollen manufactures have lately formed themselves into unlawful clubs and societies, and have presumed, contrary to law, to enter into combinations and to make by-laws or orders by which they pretend to regulate the trade and the prices of their goods, and to advance their wages unreasonably. . . . etc."

¹ 7 Geo. I, st. i. c. 13. Amended by 8 Geo. III, c. 17 (1768).

² *Sheffield Iris*, August 8, 1820; but the *Iris* of August 5, 1823, records a celebration of the centenary of the founding of the Tailors Club.

³ 12 Geo. I, c. 34.

In 1749 it was found necessary to extend this specific prohibition of labour combinations to the dyers, hot pressers, and other branches of the woollen industry, and also to the workers in silk, mohair, fur, hemp, flax, linen, cotton, fustian, iron, and leather.¹ The hatmakers' trade, which was also included, affords a further example of active organization among journeymen in a trade carried on by little masters.

During the second half of the century the rapid extension of this widespread movement towards labour organization is attested by further special legislation, such, for example, as the increased penalties imposed on combinations in 1756, the revision of the hat trade regulations in 1777, and the famous statutes establishing official wage rates for the silk industry and prohibiting combinations in that trade in 1773 and 1792.² Thus the way was paved for the sweeping legislative prohibition of combinations of workmen in any trade whatsoever in 1799 and 1800.³ The main provisions of this last famous statute were to the effect that all agreements between workmen for the purpose of improving their status as employees were declared illegal, and it became a penal offence either to dissuade a fellow-workman from seeking or following his employment, or to interfere with the free wage-bargaining of a master with his individual workmen.

It is interesting to remember that, while both the above statutes (1799 and 1800) were severely repres-

¹ 22 Geo. II, c. 27.

² 29 Geo. II, c. 55 ; 17 Geo. III, c. 55 ; 13 Geo. III, c. 68 ; 32 Geo. III, c. 44.

³ 39 Geo. III, c. 81 ; repealed and amended by 39 and 40 Geo. III, c. 106.

sive of all attempts at collective bargaining by employees, the latter enactment contained provisions far in advance of the spirit of the times in reference to the compulsory arbitration of industrial disputes. It attempted to establish a cheap and summary procedure for the settlement of all questions at issue by reference to a tribunal composed of one arbitrator appointed by each party, who might take evidence on oath; failing agreement between such arbitrators a justice of the peace might be called in to adjudicate between them.¹

In spite of the menace conveyed by these attempts at repression, the spirit of combination spread rapidly among the workmen in the Sheffield industries during the eighteenth century. Their clubs at this time were ostensibly benefit societies, but it is probable that, like the Tailors' Society, they were also concerned with trade regulations and disputes. A Cutlers' Benefit Society was founded in 1732. The file-smiths united in the same year; indeed, there is evidence of a still earlier origin in the fact that the File-smiths' Society celebrated its centenary in August, 1821.² In 1748 the Grinders' Society made its appearance. There were likewise a number of other sick clubs whose membership was not based on industrial occupation, such as the Old Unanimous (1733), the Society Depending on Providence (1741), and the Old Gentlemen's Club (1750).³ By 1786 there were no less than fifty-two such societies in existence.⁴ In 1814 we hear of these clubs uniting their forces in a

¹ This provision was amended and restricted to specific causes of dispute by 5 Geo. IV, c. 96 (1824).

² *Sheffield Local Register*.

³ *Ib.*

⁴ *Sheffield Iris*, July 5, 1814.

procession to celebrate the proclamation of peace, and on this occasion, at all events, there is no distinction drawn between clubs which we know to have been trade clubs and those which apparently were simply friendly societies. The paucity of the eighteenth-century records unfortunately renders it impossible to follow in detail the activities of these early experiments in combination, or to determine the scope of their operations. Little, moreover, has so far been recorded of the doings of similar combinations elsewhere, though in Manchester we have evidence of combinations of weavers to raise wages in 1754 and 1759, and from the rules of the worsted small-ware weavers, printed in 1756, it may be inferred that the organization had been in operation for many years previously. A similar club existed in Oldham in 1758.¹ In 1786 we have the record of a strike among the bookbinders of London,² and a few years later there were serious strikes among the Kentish paper-makers at Dover and elsewhere.³ It is not until the latter end of the century, when the newspaper files begin, that the Sheffield evidence becomes definite. It now reveals a picture of homogeneous groups of workmen actively, and often apparently successfully, agitating to enforce the recognition of written piecework price-lists or "statements." As the traditional system under which they worked secured to them individually the power to control their hours of work, these disputes had no reference to the length of the working-day, but were concerned solely with the prices paid for their labour. The employment of

¹ Chapman, "The Lancashire Cotton Industry," 180.

² Bowley, "Wages in the Nineteenth Century," 134.

³ Journal of the House of Commons, li. 595.

these official price-lists as the basis of negotiation between the master, workmen, and the merchants is a sign of the class separation of which we have spoken ; it is not peculiar to the cutlery industry, but is found wherever piecework had become the established method of wage payment, as, for example, in the weaving trade¹ and among the framework-knitters of Nottingham.²

The first occasion on which we hear of a dispute in Sheffield leading to a strike, is in 1787, when the cutlers took this means of protesting against the practice—which the masters were then beginning to adopt—of insisting on counting thirteen knives to a dozen.³ This dispute furnished William Mather with the theme for the most popular of his satirical songs. It consisted in a violent tirade against Jonathan Watkinson, the then Master Cutler, who in his official capacity was responsible for introducing a readjustment of the conventional counts for cutlers' work, whereby it was decreed that thirteen knives should be counted as a dozen. Watkinson had thus become the target for the shafts of popular resentment. A single stanza will suffice to exhibit the virulence of the attack :

“ That monster Oppression—behold how he stalks !—
Keeps picking the bones of the poor as he walks.
There's not a mechanic throughout this whole land
But what more or less feels the weight of his hand.
That offspring of tyranny, baseness, and pride
Our rights hath invaded and almost destroyed.
May that man be banished who villany screens,
Or sides with big W . . . n and his thirteens.

¹ Brentano, “Gilds,” 133. ² Felkin, “History of Hosiery,” 230

³ Hill, “Trades Combinations and Strikes.” Social Science Association, 1860.

Chorus.

“ And may the odd knife his great carcass dissect :
 Lay open his vitals for men to inspect :
 A heart full as black as the infernal gulf
 In that greedy, blood-sucking, bone-scraping wolf.”

Elated by the popular success of this song—there was no surer note to catch the cutler's ear than that of bitter enmity against a master who attempted to reduce the price for work—the poet continued his attack with a lampoon entitled “ Watkinson's Repentance ” :

“ At length this old Wolf to repentance is brought,
 Who a long time in Sheffield hath wandered about ;
 A large blackguard snatch of late he hath made,
 To pull down the prices of the cutlering trade.

Chorus.

“ But he gets well remembered what a rogue he has been
 In extending dozens from twelve to thirteen.”

This “ extortionate practice ” doubtless meant to the men a reduction in the wage-rate ; and probably most of the disputes that have occurred in the trade in the intervening decades have been fought upon this very same battleground.

Three years later, in 1790, we find that trouble had broken out in the scissors trade, and thirty-four master scissors-makers met in solemn conclave to devise means whereby they might suppress the “ unlawful combination of the scissors-grinders, formed for the purpose of advancing their wages.” They contended that the price-list put forward by the grinders was impracticable, and would drive the trade away. They stated, moreover, that the men were attempting “ to carry a similar combination through every trade

and branch within the Corporation.”¹ An urgent summons was therefore issued, begging the masters in every trade to attend a general meeting for the purpose of taking common action.² This general meeting of merchants and manufacturers duly assembled, and appointed a committee to institute prosecutions against the scissors-grinders and other workmen “who have entered into unlawful combinations to raise the price of labour.”³ A subscription list was opened, and substantial funds accumulated. The first result of this organized procedure was the conviction of five scissors-grinders for refusing to complete the work which had been given out to them,⁴ though the price offered represented in the men’s view a large discount from the standard rate. For this offence four of the prisoners were sent to gaol for three months and the other for one month. Whether these combinations were definitely illegal as such at this time appears doubtful; though even if they escaped the statutory provisions of the Act of 1749, they might no doubt have been proceeded against as conspiracies under the common law.

It is interesting to note that the abusive term “black” is used in connection with this early dispute as applied to workmen who refused to support their fellows. Originally the word “black” meant a poacher who went about masked or with blackened face, while “blackleg” was a name given to turf swindlers.⁵ The term “snake” appears to have pre-

¹ *i.e.* the Cutlers’ Company.

² *Sheffield Advertiser*, August 20, 1790.

³ *Sheffield Local Register*, September 9, 1790.

⁴ *Sheffield Register*, September 24, 1790.

⁵ See 9 Geo. I, c. 22 (1720).

ceded "blackleg" in general currency. "Black," "black sheep," and "blackleg" became the favourite appellations for men who filled the places of workers who were on strike.¹ Other names, such as "knobsticks" or "nobs," applied to strike-breakers were already popular in the thirties,² while "scab" was also in common use by the middle of the century, having apparently been imported from America, where it was employed as early as 1811.

In 1791 a benefit society was established among the Sheffield scissors-smiths, a fact which is indicative of the rapid spread of combination among all branches of the trades.³ The effectiveness of this movement is shown by the fact that in 1793 the general advance in wages was made the pretext for the increase in the price of scythes and other articles.⁴

The next appearance of a serious industrial dispute is in 1796, when there was a strike among the spring-knife cutlers, and also among the workmen in the table-knife trade.⁵ A full account has been preserved by the local Press, and it is worth while to reconstruct the course of the dispute in some detail for the sake of the light it throws on the relation of the parties to one another. The master spring-knife cutlers met together, on July 8th and 13th, to deal with the situation caused by the strike. With five dissentients the representatives of ninety-six firms resolved to resist the demand for an advance of wages. They pledged themselves not to employ one another's

¹ See, for example, the lawsuit *Reg. v. Hinchcliffe*, August, 1867.

² See Committee on Combinations, 1837-8, *passim*.

³ *Sheffield Local Register*, April 3, 1791.

⁴ *Sheffield Register*, August 2, 1793.

⁵ *Sheffield Iris*, July 15, 1796.

workmen without the written consent of the former master, this precautionary measure being devised for the purpose of preventing a concentration of the strike on a few masters at a time—a practice that had been a common one under the mediæval guild, and one which continued to be a favourite device among the cutlery workers. The masters decided further to refuse to make cash advances to the workmen during the dispute, it being a usual though vicious practice for the thriftless worker to borrow substantial sums from his employer against the pledge of his future labour. The better the workman, it may be noticed, the greater the debt he could contract in this way; and often when one master refused further advances, he would sell himself to another for a higher sum, discharging the former obligation out of the proceeds.¹

On July 12th fifty-six table-knife manufacturers met to discuss the dispute in their branch of the trade, and voted the same resolutions, with this significant addition, "That it is the opinion of this Meeting that it behooves the Master Manufacturers of the whole town to unite with each other for the purpose of suppressing the present conspiracy, as well as for discouraging any similar attempt in future," surely an ironical commentary on the illegality of the workmen's combination. In response to a requisition served on the Master Cutler, a general meeting was duly convened by him on July 15th, to which were summoned all master manufacturers of knives, sickles, shears, scissors, razors, and scythes. The editor of the *Iris* speaks of the situation as uncommonly momentous and critical.

¹ See, for example, *Sheffield Iris*, January 2, 1810. See above, p. 219.

The greater part of the "journeymen manufacturers" have, he says, refused to work without an advance of wages, "such as the masters think signally improper under present circumstances. The consequences as they affect the trading interests of the town are too serious to be reflected upon without alarming anxiety." At this juncture the Spring-knife Cutlers' Union put forward their side of the case in the form of a manifesto, the respectful yet decisive tone of which indicates the strength of a well-organized society. It was worded as follows :

"According to our promise to the committee of master manufacturers of spring-knives, we delivered last night at a general meeting of the masters our propositions, which are as follows :

"(1) That all forging of scales, springs, and blades shall be advanced in price twopence per shilling.

"(2) That all spring-knives shall be advanced in the price of working twopence per shilling, from the lowest up to seven shillings per dozen.

"(3) That all spring-knives from seven to fifteen shillings per dozen be advanced in prices of working penny per shilling.

"(4) That all spring-knives shall be advanced in the prices of working one halfpenny per shilling, from fifteen shillings per dozen up to the highest.

"The advance of prices as above stated to take place on the 22nd of August next, if agreed to.

"Yours, etc.,

"THE JOURNEYMEN SPRING-KNIFE MAKERS.

"N.B.—In order to take away the odium that has been reflected upon us by some persons respecting not giving our masters a proper Notice of our necessity [*sic*] advance, it is sufficient to inform them that an advertisement was circulated in March last requesting the Masters to take into consideration the necessity we were under of having our wages advanced, hoping they would call a meeting among themselves and in some measure redress our grievance, which they did not ; and therefore we were under the painful necessity of acting in this manner.

"SHEFFIELD, July 14, 1796."

What was the immediate issue of the struggle we do not know, but it is worth noticing that these men and their masters had devised a method of handling their disputes which was equivalent to the machinery of a modern board of conciliation in all essential features—the small committee of masters negotiating directly with representatives of the men over the recognition of standard conditions of employment.

Of the constitution of the men's societies at the time it is not easy to learn much, owing to the secrecy with which they were necessarily conducted. The rules of one of them, however—the Saw Smiths' Society, founded on December 18, 1797—have happily survived,¹ and from these we may draw some conclusions as to the conduct of a typical club. The model which the saw-smiths chose in drawing up their rules appears to have been the constitution of the Cutlers' Company itself. They adopted the titles of Master and Warden for their chief officers,² imposed fines on members who refused to take office, and laid down regulations governing the admission of apprentices. But they also undertook to provide unemployment and superannuation benefits for their members, after the manner of a modern trade union. Clearly the club was intended to act as the guardian of the corporate interests of one section of the trade, just as the Cutlers' Company, in the days when its organization was effective, had supervised all branches alike. Many of the other early societies manifest this same intention to preserve the spirit of the ancient ordinances of the Cutlers' Company. This is shown

¹ See Appendix XI.

² Much later than this the designation of "Beadle" was given to an official of the edge-tool trade.—*Sheffield Iris*, May 16, 1844.

with especial clearness in the case of the apprenticeship regulations laid down by the unions. In this case the rules insisted on the observance of the traditional term of service, lasting for several years or until the boy attained his majority—whichever period was the longer. So, too, with regard to numbers: only one lad might be bound at a time except the sons of the members, and no man might take a boy until he himself had worked a specified period as journeyman. In the case of spring-knife cutlers this period was four years, in the razor-hafters' society seven years, and among the razor-grinders nine years. These regulations were regarded by the workers as the mainstay of their skill and security, and the conduct of the unions for the succeeding generation constituted in many respects an appeal to the old principles of regulated trade. Such also was the spirit which animated the Sheffield Freeman's Society, formed by about three hundred journeymen masters in 1833 in a frank endeavour to restore bygone usages. Even the practice of "rattening"—the removal of the tools and wheelbands of recalcitrant members of the trade by those who wished to coerce them, which, of course, was responsible for bringing many serious disturbances and troubles on the trades—was in its essence a relic of the ancient legal right of the gild to enforce the observance of trade rules by distraining upon the property of the defaulting member, a right which was enforced as late as the seventeenth century.¹ Nowhere was the spirit of loyalty to industrial traditions stronger than in Sheffield.

What was the reason for the rapid advance in the

¹ Brentano, 63.

power and effectiveness of these sectional unions during the last two decades of the eighteenth century? There was at least one predisposing cause which must have given a great stimulus to combination—namely the exceptionally high level to which general prices had advanced, being approximately 100 per cent. above the level of fifty years later. Prices in Sheffield in 1796 show alarming increases over those prevailing before the war. Bread had risen from 6½d. to 8½d. per quartern loaf; meat from 4½d. to 8½d.; butter from 9d. to 1s. 2d. per lb.; sugar from 8d. to 1s. 1d. per lb. Clearly such increase justified and necessitated a revision in the established rates of payment. The movement continued during the first decade of the new century, and the men's agitation, which had been held in restraint by the occurrence of a succession of lean years, broke forth with renewed vigour during the burst of prosperous trading which followed in 1809 and 1810. In the latter year the spring-knife cutlers among other sections are again to the fore, demanding a further rise of wages in consequence of the increased cost of provisions. They complain that wages have declined while the prices of the necessaries of life have risen enormously, so that while the average wage of a cutler is not more than 16s. a week, the cost of victuals, as shown by the workhouse accounts, is 3s. 8½d. a week per head. On these grounds they justify their claim to an advance of wages for hafting knives equal to 25 per cent. of the scale for all knives of less value than 5s. a dozen, and 17 per cent. on higher-priced knives. Also they seek to put an end to the practice of compelling the workers to take a pro-

portion of wages in the form of "shop goods" of inferior quality rated at exorbitant prices. This is their reply to the masters' appeal for subscriptions to set on foot prosecutions for conspiracy.¹ Advances of wages were conceded at this time in most branches of the trade, compensated for by increases in the selling price of manufactures. This was so in the steel scissors trade,² as also in the file trade, where the workers had secured a 15 per cent. advance,³ and in the sickle trade.⁴ The table-knife-hafters, who also gained an advance, signalized the concession by holding a public dinner.

Despite these successes, the speculative and fluctuating character of the trade during this period prevented the workers from securing the full benefit of the high nominal wage-rates then in force. The new price-lists for work adopted throughout the trade during the years 1810-20, and ratified in many cases in the presence of magistrates, appear to have been exceedingly reasonable, having regard to existing conditions at that time. The subsequent course of events, however, was largely governed by the rapid fall in general prices which set in after 1818, so that the scale of wages which was operative during the second decade of the century constituted a high-water-mark level, to which the workers of succeeding generations naturally continued to appeal as the just standard, and constantly endeavoured to regain or enforce, and which in all cases formed the basis of subsequent agreements.

We have seen how during the disputes of 1796 the masters appointed representative committees to nego-

¹ *Iris*, April 10 and 17, 1810.

² *Ib.*, January 7, 1810.

³ *Ib.*, February 20, October 30, 1810.

⁴ *Ib.*, July 12, 1810.

tiate with the workmen. We have now to examine an important development of this co-operative spirit among the masters which originated in 1814, the immediate cause being the success of the unions in raising wages to a point which the masters regarded, rightly or wrongly, as a menace to the prosperity of the trade. This new movement resulted in the establishment, at a meeting on March 23rd, 1814, under the presidency of the Master Cutler, of an association of over four hundred merchants and master manufacturers, under the title of "The Sheffield Mercantile and Manufacturing Union."¹ The avowed object of the union was "to give respectability and stability and permanence to the various branches of our manufactories which the late unprecedented and illegal combinations must, if permitted to take effect, eventually destroy." The method adopted was as follows: in addition to a general executive committee representing both the inland and foreign merchants and manufacturers representing every branch of trade, there were set up separate committees for each trade. These committees were to determine a fair and equitable scale of wages and offer the same to the workers. In order to enforce these provisions each merchant was bound under a penalty of £100 not to purchase any article at a higher price than that prevailing in 1813, and every manufacturer was similarly bound not to pay higher wages than he did in 1813, unless and until they had been agreed to between the masters and the workmen. To prevent the necessitous masters making concessions withheld by the general body, the merchants undertook not to purchase the products of a branch affected by a dispute, and the committee

¹ See Appendix XII.

offered to accommodate "manufacturers of little property who may be inconvenienced by the suspension of trade" with loans free of interest. The importation of labour and the utilization of machinery were to be facilitated and encouraged. Parliament was to be petitioned for the repeal of the apprenticeship clauses of the Cutlers' Act. Representations were to be addressed to the overseers asking that poor relief should be refused to men holding out for higher wages. Lastly, with captivating irony, the meeting approved of an address to the magistrates "respectfully entreating them to put the laws in force against all persons who are found guilty of combinations and conspiracies." These proceedings appear to have been aimed primarily at the grinding branches, which were always the best organized and the most determined. Thus, with a view to increasing the authority of the masters, the latter were strongly recommended to become tenants of the "troughs" at the grinding-wheels where their men worked, and to lease them to their grinders on monthly tenancy.

The menacing character of these proposals caused consternation among the men's societies, which latter now found themselves confronted by a formidable organization. It became necessary to make the best terms that they could with the union. The worst organized branches, like the haft-pressers, were promptly brought into line and their price-list sanctioned. The penknife-grinders through their accredited representatives expressed themselves satisfied with the scale fixed on February 7th, 1814, which, they claimed, had aroused no criticism. The table-knife-hafters on their side repudiated the charges brought against them. They were anxious, they said, to meet and

negotiate with their employers in order to convince them that the scale in force in their case afforded neither "competence for the present nor provision for the future." They further asked for lenient treatment on account of the "complicated misery" under which they had long laboured.

The funds originally subscribed for carrying on the wide operations of the Mercantile and Manufacturing Union amounted to £6,750. Being thus amply provided with the sinews of war, the union lost no time in taking vigorous action against the grinders and other recalcitrant employees when milder methods failed. Arbitration was tried at first, but was unsuccessful, the verdicts being repudiated by the defeated party, whether masters or men. In May, 1814, fourteen grinders were sentenced to imprisonment and warrants were issued against one hundred more. The masters, we are informed, drew lots to decide who should prosecute.¹ Similar convictions were obtained against five knife-grinders in October, 1814, their offence being that they and their fellows to the number of fifty had refused to receive blades from the warehouse "unless the advance specified in a printed statement were granted."² In the following year several scissors-grinders were also convicted. The number of prosecutions was considerable, and sentences of imprisonment followed one another in rapid succession. Moreover, the success of proceedings taken against some tilters or forge-workers in May, 1814, shows that the agitation was not confined to the workers in the trades embraced by the Cutlers' Company. The tilters' crime was that they had held

¹ T. A. Ward, "Diary."

² *Iris*, November 1, 1814.

meetings to obtain an advance of wages, and had raised a fund to support workmen on strike, in contravention of the anti-combination law.¹ Their plan of operations was to strike one firm at a time until they had raised wages all round. The Mercantile and Manufacturing Union was, of course, just as illegal as the workmen's societies, but the latter had no means of enforcing its dissolution, lacking as they did both money and legal assistance. Their helplessness is well illustrated by an incident in 1818: some cutlers were appealing against a conviction for conspiracy, but their cause would have been lost had it not been for the timely arrival, while the hearing was actually proceeding, of financial support contributed by the trade clubs of Manchester.² It is cheering to know that the best and most foreseeing of the masters disapproved of the masters' association. "The Union is illegal, and I am glad to be out of it," writes one of them, adding, in reference to the prosecutions, "the law is harsh, for wages are difficult to be advanced except by combination."³

As long as the organization remained intact the Mercantile and Manufacturing Union was sufficiently powerful both in finance and in organization to counteract the most strenuous efforts of the workmen's unions. It may indeed be doubted whether it was even necessary for them to invoke the assistance of the anti-combination law. At all events, in the years of distress that followed the boom caused by the opening of the ports on the conclusion of the war, all power of resistance on the part of the Unions was broken

¹ *Iris*, May 17, 1814.

² Place, MSS. 27799-156; quoted by Webb.

³ T. A. Ward, "Diary," 216.

down, and the problem how to alleviate the general distress became the question of most importance. A relief fund of nearly £3,000 was subscribed at a public meeting in January, 1817, and a similar fund was opened two winters later for the relief of workmen in the spring-knife trade. Meanwhile the burden of poor relief had become so alarming that fears were entertained as to the possibility of collecting the assessments.¹ The actual expenditure on poor relief in the town had grown as follows: 1790, £4,529; 1800, £12,344; 1810, £16,453; 1820, £32,301. It had been customary for many years for men out of work, or even on strike, to resort to the overseers for relief,² and the action of the Mercantile and Manufacturing Union had given them additional grounds for utilizing this last resource. In January, 1820, we find the workers in the spring-knife trade applying for relief on the definite ground that the action of the Union of Master Manufacturers had deprived them of their livelihood.³ The masters' committee, which had adopted the policy of trying to restrict the output, supported the application, which was, however, opposed by the farmers and other ratepayers. The Master Cutler stated that there was no demand for Sheffield goods in any part of the world; and other masters complained that the over-production was aggravated by the practice of the men in receipt of relief working at their trade for small supplementary earnings. The rate at which out-relief was granted was 4s. a week for a man, 2s. 6d. to 3s. for a woman, 1s. 6d. for each child, and nearly three hundred journeymen in the spring-knife trade were then receiving

¹ *Sheffield Local Register*.

² *Sheffield Iris*, March 2, 1813.

³ *Ib.*, January 18, 1820.

parish pay.¹ Wages were so low that an order for 120 dozen knives which would have cost £172 at 1810 prices was executed by a little master at the time for £80.

At this juncture a new proposal was put forward, inspired by the practical and enlightened sympathy of the poet, James Montgomery. Public meetings were held in February and March, 1820, and a scheme was formulated² by which the unions were to be superseded and their members enabled to obtain satisfactory conditions without imperilling their operations by running counter to the combination law. The announcement of the plan was hailed with acclamation, and one at least of the unions, that of the spring-knife cutlers, promptly dissolved.³ The essence of the recommendation was the adoption of a scheme of voluntary, mutual, unemployment insurance assisted by the masters. Men in work were to contribute one penny in every shilling of their earnings, and the masters were to supplement this sum by a fixed amount for every man employed. The fund was to be further augmented by private subscriptions and contributions from the poor rates. The Sheffield Trade Union, as this organization was called, hoped to put the scheme into operation sectionally throughout the different branches of the trade. In the razor trade it was effectively adopted, and adequate provision was made for those out of work.⁴ With greater difficulty this was also attempted in the spring-knife trade.⁵ In its essence the scheme was practicable as well as highly ingenious; but the necessary

¹ *Iris*, February 1, 1820.

² See Appendix XIII.

³ *Iris*, February 8, 1820.

⁴ *Ib.*, May 2, July 4, 1820.

⁵ *Ib.*, May 23rd.

machinery was lacking for placing it on a stable and permanent basis, and though it was worked with temporary success in the above branches it was soon allowed to fall into oblivion.

The movement for the repeal of the combination law in the early twenties naturally called forth an eager response from the workers of Sheffield, who had indeed suffered greatly under the harshness of its provisions. At a public meeting of "journeymen mechanics and other tradesmen," a vigorous protest was made against the inequality of the incidence of the law as between masters and men. The meeting endorsed the opinion that the existing law "precludes the industrious mechanic from even attempting to obtain a fair remuneration for his labour, while it empowers the employers under the protection of these partial laws to use their united efforts to reduce the price of labour to so low a pitch as totally to destroy the possibility of the employed supporting their respective families."¹ This statement of the case was indeed fully corroborated by the report of the House of Commons Committee which investigated the matter the following year. The Committee reported "that the masters have often united and combined to lower the rates of their workmen's wages, as well as to resist the demand for an increase, and to regulate their hours of working." This verdict was, however, counterbalanced by the finding that "societies legally enrolled as benefit societies have been frequently made the cloak under which funds have been raised for the support of combinations and strikes."² The result of this inquiry was the passing

¹ *Sheffield Iris*, December 9, 1823.

² Select Committee on Artisans and Machinery, 1824.

of the Act repealing all the statutes then in force against combinations of workmen and releasing the persons who entered into such combinations from any liability to prosecution for conspiracy or any other punishment under the statute law; its provisions merely penalized the action of those who, by violence to person or property, or by intimidation, interfered with the normal carrying on of industrial activities.¹ The passing of this measure was unfortunately followed by an epidemic of strikes, and Parliament was driven into panic legislation the following year. The new Act was in its turn repealed—except for the provision which abolished the old anti-combination statutes—and in its place there were laid down complex and stringent regulations prohibiting abuses in the conduct of a trade dispute.²

In the interval between these two enactments another parliamentary investigation had taken place, and the Sheffield cutlers had been active in collecting evidence to show that the repeal of the old laws “has produced consequences the most beneficial to all classes and if allowed to remain in its present state would consolidate and firmly establish peace, prosperity, and happiness in all the manufacturing districts.” A vigorous campaign had been carried on, and the protests of the workmen met with much sympathy from the masters, the Master Cutler himself presiding over a monster meeting called to support a petition to Parliament.³ Similarly, when in 1838 a Select Committee was appointed to inquire into the working of the revised statute, the Sheffield trades

¹ “Hume’s Act,” 5 Geo. IV, c. 95 (1824).

² 6 Geo. IV, c. 129 (1825).

³ *Sheffield Iris*, April 19, May 10, 1825.

appointed a committee to take such steps as might be found necessary for the purpose of safeguarding their recently won privileges and securing still greater freedom of operation.¹

The combination laws were not the only form of legislation which pressed hardly on the cutlers' labour organizations ; the operation of the Poor Laws was almost if not quite as great a hindrance to their activities. We have seen how in 1820 the action of the Mercantile and Manufacturing Union had driven the workers to seek relief from the parish, and had led to the lowering of wages to the level of parish pay. The Poor Law had been, in fact, utilized as a machine for reducing wages. In some cases the manufacturers were subsidized by the payment of parish doles to their employees while still engaged in their work ;² in other cases the law had been applied in a manner almost equally destructive of the wage standard, for the overseers supplied applicants for relief with notes to take to employers, and if the latter offered work, "although at so low a rate as to render it impossible to subsist," it had to be accepted or parochial relief would be refused.³ A few years later (in 1830) the officers of the file-smiths' society pointed out the moral of this procedure to their members in the following resolution : " We are of the opinion that any file-smith applying to the overseers of the poor for parochial relief has a direct tendency to reduce wages, because he is sent by them to any master, at such prices as he may think fit to give."

¹ *Sheffield Iris*, March 6, 1838.

² *Ib.*, January 18, November 14, 1820.

³ *Ib.*, December 9, 1823.

The passage of the new Poor Law put matters on a new footing, and its operation was assisted by a spell of prosperous trade : but in the distressful years 1842-3 the old trouble reappeared. In February, 1843, the guardians issued a circular which aroused the bitter resentment of the trades. The obnoxious paragraph was in these terms : "To relieve parish funds as much as possible the master manufacturers are recommended to divide their work wherever it is practicable so as to employ the greatest number of hands, and in every case where employment is refused under any pretext whatever, and there is reason to suppose that the person so refusing is receiving or intends to apply for relief, the manufacturers are respectfully requested to give immediate information to the guardians."¹ This was not unnaturally interpreted by the men as an attack on wage rates and prices, and was vehemently repudiated by the trades delegates, with the result that they obtained its temporary withdrawal. Later in the year, however, the old plan was reverted to, applicants for relief being furnished with a form duly filled in and stating that the bearer was a tradesman out of employment and specifying the amount of parish relief to which he was entitled. This form the applicant had to take to the masters in his trade, who were requested to find the man work at the specified rate.² These methods of relieving the burden of the rates continued to meet with the keenest hostility from the trade societies, the opposition being based on the conviction that its effect was to make the parish rate of pay the standard for the trade.³

¹ *Sheffield Iris*, February 25, 1843.

² *Ib.*, October 7, 1843.

³ *Ib.*, January 30, 1845.

That the workman's side of the chronic trade union controversy did not always suffer for want of shrewd and able advocacy may be inferred from a contribution by Ebenezer Elliott, the Sheffield poet, on the related topics of the Corn Laws and the trade unions in 1833.¹ He expressed the state of feeling in Sheffield in the form of a debate between master and workman:

The master says: "The Germans undersell me. Your wages must not be raised but lowered, or else the trade will go to Germany."

"Then I shall starve," replies the workman. "The real issue between us is whether I am to starve before you lose your trade or after. I will not starve. I will have high wages from you first, and then follow the trade to Germany."

"But the Germans can undersell me and obtain twice my profit," says the master.

"Then," says the workman, "they can pay twice as much wages; let us both go there."

The master retorts: "If you insist on unreasonable wages my work shall be done by apprentices."

Workman: "I will not allow you to do so."

Master: "Tyrant!"

Workman: "The same to you! Have you forgotten the Combination Laws?"

The master's statement, says Elliott, is correct. German scissors are half the price of Sheffield goods. Belgian cutlers make and sell a dozen steel knives and forks for 1s. 8d. The Belgian saw-maker sells saws of equal quality at one half the British price. The Russians in the New York market undersell John Barber's razors by 30 per cent., and Rodgers's cutlery by 40 per cent. What is the reason? We pay 3s. a stone for flour while the German pays only 1s. 3d. Belgium and Russia likewise enjoy cheap bread. The manufacturer's remedy is therefore obvious!

¹ *Sheffield Independent*, January 12, 1833.

The earliest attempt at federal union of the various groups of cutlery workers was the establishment on July 9, 1822, of a society called the Sheffield Mechanical Trades Association, which was to embrace the "Spring Knife, Table Knife, Scissors, Pressers, Fork, and File Trades," and was duly officered by a Board of Directors with a President and Vice-President, Secretary, and Beadle, and financed by a capitation fee of one shilling per member. It was clearly intended to exercise wide control over the trade organization, and its articles of association included what were virtually by-laws for that purpose. The association was apparently devised not merely to serve the purposes of a trade union, but also to usurp in a large measure the functions and authority of a reorganized and democratized Cutlers' Company. It was laid down, for example, that no person belonging to the associated trades might have more than two apprentices at a time, and that only the sons of those who belonged to one of the trades might be so bound. Further, no person was to be permitted to practise the trade unless he had served a "legal apprenticeship" and was properly equipped with tools or a shop. Members were to be maintained when out of work and the directors reserved authority to impose a system of "short time" on the trades whenever more than 25 per cent. of the workers were unemployed, until the trade revived.¹ This is peculiarly interesting as utterly ignoring the authority or even the existence of the more substantial manufacturers and the Cutlers' Company, and as evincing the belief that the affairs

¹ See articles of the Sheffield Mechanical Trades Association, Appendix XIV.

of the whole industry could be controlled by the "master journeymen."

A few years later another association was established, called the Trades' General Union, which was working on the old basis of trying to establish a joint organization of masters and men—"a union of interests betwixt the working classes and their employers" as it was described by its president and chief organizer, John Barker.¹ By such a union, he held, the parties would be brought into direct and harmonious relationship; "their mutual interests would be better understood, and the most beneficial results might be anticipated, if the whole were conducted with temperance and candour."

The scheme was as follows: each workman was to pay 3d. a week, of which 2d. was to go to the funds of his own trade and 1d. to the general fund. On the basis of 12,000 workmen this would yield a gross income of £150 a week from the employees. The masters, for their part, were to pay ½d. per head per week for each workman employed, and thus bring the total contributions to £175 per week. These funds were to be administered by a joint committee of masters and men. In case of trade becoming bad, "the master manufacturers, acting in union with their workmen, would be interested in keeping their workmen together, and would undoubtedly do so if only on stinted wages: still, however, paying the regular price. If the pressure became so great that they could not employ them, here would be a fund capable of giving relief to the superabundant workmen and of preventing the accumulation of little masters, who are often compelled by their necessities to commence as

¹ *Sheffield Iris*, March 30, 1830.

manufacturers, and who by their increase, and the quantity of work they are compelled to execute, tend to the continuance of the evil by adding to the stock of a glutted market." The basis of the plan was thus to be co-operation and identity of interests between workmen and employers, instead of mutual hostility and recrimination. The Cutlers' Company, however, to whom the scheme was referred, refused to entertain the idea. The conception was a lofty one, but the actual opposition of interests could not in practice be thus disposed of by ignoring it, and the scheme was doomed to failure from its birth.

The more natural form of consolidation was the increase in co-operation between the sectional trade societies in the interests of labour alone. At first they came together only when there was some definite and exceptional situation to deal with; but as early as 1836 there seem to have been regular meetings of the representatives of some twenty organized trades.¹ In 1842 this representative committee included a file-smith, a razor-smith, a saw-maker, a saw-handle-maker, an edge-tool-grinder, a saw-grinder, a joiners'-tool-grinder, a sawback-grinder, and a razor-grinder.² This Committee of the Associated Trades, as it was called, found full employment during the starvation crisis of 1842-3. They urged the adoption of a scheme for purchasing land and setting the unemployed to work to maintain themselves by spade husbandry.³ The table-knife-hafters had, in 1840, found employment in gravel-pits; and the joiners'-tool and brace-bit trades had made work for their unemployed in the cultivation of

¹ *Sheffield Iris*, March 1, 1836.

² *Ib.*, December 10, 1842.

³ *Ib.*, April 22, 1843.

waste land, an example which was subsequently followed by the edge-tool-grinders and the file-hardeners.

The next step was the appointment of a committee of trade delegates to consider the feasibility of forming "a union of all trades," in order to ensure more complete co-operation ; but the committee, after consideration, reverted to the old suggestion of a general union of both manufacturers and journeymen rather than a simple consolidated trades union.¹ The movement was apparently carried some way towards completion, since we hear a few months later that "a general union composed of twenty-seven trades or branches has been formed with a common fund"; and the co-operation of the masters was thereupon invited.² A little later there was established a Committee of the Central United Grinding Branches, but this body was primarily concerned merely with the movement for improving the ventilation of the grinding wheels and lessening the trade mortality. It represented the grinders in the razor, fork, scissors, penknife, table-knife, saw, file, joiner's-tool, fender, edge-tool, and scythe trades.³ This organization falls outside the main trend towards trade union consolidation, as is also the case with the Freeman's Society in 1831, which aimed at the reform of the Cutlers' Company, and the Workmen's Protection Society, formed in 1846 to resist the persecution of the masters' organization—the Merchants and Tradesmen's Protection Society—in regard to intimidation and trade outrages. John Drury, the able secretary of the grinders' committee above referred to,

¹ *Sheffield Iris*, May 27, 1843.

² *Ib.*, September 23, 1843.

³ *Ib.*, March 14, October 17, 1844.

attempted to form an organization in 1849 called the "United Trades of Sheffield," and gave some impetus to the movement for a national federation of labour. This effort, however, was not rewarded by success.

In 1859 the Sheffield trade societies were federated on a new basis by the foundation of the "Association of Organized Trades." Its birth was due to the resentment caused by a libel action against two union officials arising out of a dispute in the printing trade. The sympathy thus aroused for a weak and oppressed union caused a general rally of the trade societies to their assistance, and resulted in the formation of the new body. By February, 1860, twenty-two societies had been enrolled, representing a membership of 3,536. The officers were Charles Bagshaw, William Dronfield, and William Broadhead. The declared objects of the association were "the establishment and perpetuation of a more intimate connection between all branches of the operative classes, and giving increased efficiency to the operation of trade societies." The association did not seek to interfere with the internal management of its constituent societies, but was prepared to support them in any approved dispute.¹ This organization for several years played a prominent part as the chief representative body in the labour movement in Sheffield. It was superseded in 1866 by the "United Kingdom Alliance of Organized Trades," a federation formed by a conference of national societies which had been held in Sheffield, and subsequently established its headquarters there, its officers being selected from among the local traders. This organization in turn perished

¹ Hill, "Trades Combination in Sheffield," 1860, p. 566.

from defections after four years' activity, but was followed in 1872 by the Sheffield Federated Trades Council, which body has ever since served the purpose of co-ordinating the activities of the sectional societies and of acting on behalf of the organized labour of the trade as a whole. In the year 1910 the Trades Council represented some sixty-eight distinct societies, or, counting individual branches, about one hundred and sixty-five separate organizations.

CHAPTER XI

THE TRADE OUTRAGES

THE small sectional trade societies of Sheffield, through which for more than a hundred years the corporate activities of the workers have found expression, reflect in their sturdy independence and tenacious adherence to ancient custom the characteristic self-sufficiency which has always distinguished their members individually. Nowhere did the practice of formal apprenticeship longer survive its legal abolition ; nowhere was the restriction of admission to the trade to members' sons more continuously and successfully enforced ; nowhere has interference with traditional trade observance been more jealously resisted. Moreover, by the very nature of the case, since these societies included within their ranks the majority of those on whose delicate manual skill the industrial reputation of the town depended, they were always in a strong and often in a dominant position relatively to a body of masters whose economic standing was in many cases little better than their own, and who possessed little of that power of voluntary cohesion and co-operation which was the secret of the trade union's influence.

Indeed, during the first half of the nineteenth century many of the unions were so conscious of

their strength that they were often dictatorial towards their masters and domineering towards the workers they represented, and were apt, when circumstances were propitious, to enforce their decrees in a ruthless and high-handed fashion.

The arbitrary enforcement of trade rules under the autocratic decrees of the unions had been a constant source of trouble since the early days of trade-unionism in Sheffield. Indeed, the practices complained of, and, in particular, the "rattening" of recalcitrant members, had their roots far back in the ancient administration of the craft guilds. Rattening was the commonest method of enforcing customary payments or other observances, and signified the removal or destruction of tools or other working appliances, such as the leather belts or "bands" which connect the grinder's stone with the revolving shafting. Such was the authority with which these abuses were enforced, that legal conviction for such an offence was rare, and, indeed, it was usual for the victim to submit to compulsion and to conform himself to the observances required of him. Probably this usurpation of power by the trade unions was fostered by the necessary secrecy with which their activities were pursued in the days when they enjoyed no legal recognition or protection. At all events, the practices complained of disappeared after the passing of the Trade Union Act of 1871. Before that time, however, matters had reached a crisis in consequence of a long series of grave criminal outrages instigated for trade purposes by a few unscrupulous officials who dominated the most powerful of the sectional societies.

The strongest and most coercive unions have always been those which existed among the various

sections of grinders ; partly because these men were more closely associated in their work than other branches and by the nature of their occupation formed a class apart, partly because they consisted of men more remarkable for physical strength than for intelligence, and to whom violence appeared to be the most persuasive form of argument. It was in these unions, at all events, that rattening was most prevalent, and it was in the same group that the employment of gunpowder for blowing up workplaces or dwellings and murderous attacks with firearms were resorted to.

That the incidents which formally brought about an elaborate governmental inquiry into the nature and origin of these offences were not merely temporary or accidental outbreaks of lawlessness, but the fruit of an evil tradition slowly maturing through several generations, will be sufficiently obvious if we briefly review the records of industrial outrage in Sheffield. As far back as 1820 we find vehement complaints of the frequency of these occurrences—"in fact," we are told, "not a day passes without some attempt being made at insult and pillage," the methods of intimidation then in vogue including even threats of assassination.¹ A few years later there was a serious attempt to destroy a steam grinding-wheel by an explosion of gunpowder,² and in another instance sentence of death was recorded against men guilty of rattening and of using firearms against the watchman.³ Rattening seems to have become still more common between 1838 and 1842, and in the latter year there was a case of incendiarism

¹ *Sheffield Iris*, March 15, 1820.

² March 2, 1826.

³ April 1, 1829.

in a grinding-wheel, causing damage to the extent of £450, and also another gunpowder outrage.¹ These incidents drew a strong protest from the representatives of organized labour, and a public meeting of trades delegates was summoned for the purpose of denouncing outrages and appealing to the trades to prevent the destruction of property.² The burden of the speeches made on this occasion was that since there had recently been many depredations committed in the town "they must devise means of placing the trade unions beyond even the suspicion that they have been in any way connected with the dreadful destruction of property that has lately taken place." John Drury, the prominent leader of the razor-grinders, roundly declared that the trades unions in general had nothing to do with such things, and stated his opinion that, "setting aside the scythe-grinders' union, no union whatever had anything to do with the recent gunpowder outrage"—denial and admission thus going hand in hand. William Broadhead, the (subsequently) notorious saw-grinder, also denounced such practices with vehemence, and the meeting adopted a fervid resolution to the effect that "the late outrages in respect to rattening and the destruction of property are a disgrace to a civilized age, and it is the height of insanity on the part of any trade to suppose that any good can arise from the perpetration of such crimes; that, considering the strong and bitter feeling that must take place in the minds of the influential part of the public towards those proceedings, as well as the desire that must arise in the minds of the same to put

¹ September 12, 20, and November 7, 1842.

² November 19, December 10, 1842.

down trades associations, it is the interest and duty of this meeting to devise the best possible means to check the further progress of such brutal scenes, and that a select committee be appointed from the various trades to carry the above into operation." There is absolutely no ground on which the sincerity of these protests can be called in question, although rattening was at this time a recognized official practice which there was little attempt to conceal—for rattened tools were usually recovered directly from the trade union secretary¹—and the complicity of individual officials in the serious outrages must have been shrewdly suspected.

A year after these events the town was startled by the news of the explosion of an "infernal machine"—an iron pipe charged with gunpowder—at the Globe Works belonging to William Ibbotson, a file manufacturer who had taken a prominent part in fighting the unions.² A reward of £1,000 for the discovery of the perpetrator was promptly announced, the Government contributing £500 and the Cutlers' Company £50, but in spite of this effort no conviction followed. Indeed, the very placard offering the reward was obliterated by a notice with the legend, "If I should have to visit him again his life may be sacrificed and his blood will then be upon his own head," and another attempt was made very shortly afterwards on different premises with a precisely similar instrument of destruction,³ and again in yet another case the home of a file-grinder

¹ See, for example, a case about the same time in which the secretary of the pen-blade grinders had fifty rattened wheel-bands in his possession at one time.—*Sheffield Iris*, September 20, 1842.

² September 30, 1843.

³ January 5, 1844.

was destroyed by a canister of gunpowder.¹ The destruction of the tools of several razor-grinders led the committee of the union to denounce the "revolting transaction" and to offer a reward of £20 for the discovery of the offender.² The disingenuousness of this action is perhaps questionable in the light of subsequent revelations. Shortly afterwards we hear of the conviction of the "beadle" of the edge-tool trade for intimidation and similar incidents in other trades.³ Indeed, so familiar had outrages become that to be "threatened with a pop-bottle," *i.e.*, a bottle filled with gunpowder, was a recognized colloquialism.⁴

At length the masters were roused to energetic corporate action, and formed the "Sheffield Manufacturers' and Tradesmen's Protection Society" for securing the protection of person and of property from trade outrage.⁵ The declared objects of the association were "to prosecute all persons for any act of molestation, damage or injury," to offer rewards for apprehension of offenders and so forth, and to compensate any master or workman suffering loss or ill-treatment in connection with a trade dispute.⁶ The organization appointed a lawyer as their agent and successful prosecutions became frequent. Not content with these activities, the society further constituted itself into a labour bureau for non-union workers, requesting all masters to engage their men through the society, and at the same time inviting workmen wanting employment in any of the branches of the

¹ March 16, 1844.

² May 9, 1844.

³ May 16, 1844.

⁴ *Sheffield Iris*, June 20, 1844.

⁵ Formed on November 13, 1844.

⁶ *Sheffield Independent*, April 1, 1848.

Sheffield trade to register, adding the significant proviso that "no member of any trades union need apply."¹ The unions, in response, emphasized the connection between incendiarism and the agrarian outrages so common at that time, and again disclaimed all responsibility for such occurrences, which were, indeed, not peculiar to the Sheffield trades. They further accused the magistrates of partiality, and of interpreting every trade difficulty as an instance of union intimidation. Finally, they resolved "that a consolidation of all the Sheffield trades is called for to repel by all legal and moral means the unjustifiable attacks made on the part of a body calling itself the Merchants' and Tradesmen's Protection Society."² Such a "Workmen's Protection Society" was, in fact, inaugurated the following year, in response to the continued activities of the masters' association,³ the funds being raised by a levy of one halfpenny per month on the membership of the trade societies affiliated for the purpose.

The controversy was further ventilated in a public debate on January 28, 1845, between champions of the masters and the men, 250 representatives of each side forming an audience.⁴ Mr. H. G. Ward, M.P., was the spokesman for the masters, and came armed with "a most horrible list of forty-four outrages, all of which were calculated to carry out the views of the workmen," which he read to the meeting. He also quoted a typical letter demanding the dismissal of certain men and threatening "such scenes as would make humanity shudder."

The next incident in this deplorable sequence of

¹ *Sheffield Iris*, May 8, 1845.

² *Ib.*, June 5, 1845.

³ *Ib.*, November 5, 1846.

⁴ *Ib.*, January 30, 1845.

events was an outrage at Castle Mills, a large steam grinding-wheel which had become, owing to the circumstances under which it began work in 1839, the headquarters of the non-unionist workmen. In this case one of the engines had been blown up and destroyed by gunpowder on October 10th, 1846. The Cutlers' Company sent a deputation to confer with the Government, and a joint committee of masters and men commenced a series of friendly discussions as to the steps to be taken to improve matters. Nevertheless, the outrages continued during the succeeding year, until on December 21st two razor-grinders who had been previously convicted for the same offence during the year were sentenced to seven years' transportation for an act of rattening at the Kelham wheel. This conviction had important consequences, inasmuch as the offenders implicated John Drury and three other members of the Razor Grinders' Committee as instigators of the attack. They testified that they had received elaborate secret instructions of the treatment they were to administer in a large number of cases, the precise degree of severity with which the tools were to be dealt with being indicated, orders being also given to pin up a paper in each case showing why the victim had been rattened. As a result of this evidence the accused, who constituted the whole of the trade union executive, were sentenced to ten years' transportation.

The town was promptly placarded with a poster in a deep mourning border issued in "respectful remembrance" of the convicts, and summoning a meeting for the purpose of making a national appeal in their favour. Shortly afterwards the Defence Committee of the trades issued this appeal, alleging that the evi-

dence was false and was inspired by vindictiveness, and further quoting a public utterance by John Drury—who had been a highly popular, respected, and successful organizer—in which he avowed that the officials of the trades were “determined to avail themselves of all moral means in their power to prevent a repetition of such brutal scenes.” The Defence Committee stated it as their intention “to make England, Ireland, and Scotland ring with one national appeal to the Legislature demanding justice for labour.”¹ On a technical point, tested in the King’s Bench Division, a reversal of judgment was secured and a new trial was ordered. When the case came on a second time, however, the prosecution was not severely pressed, and the trial ended with the discharge of the prisoners on entering into their own recognizances to appear for judgment when called upon. This leniency was due partly to the general respect in which Drury was held, partly to the feeling that the actual offences for which the prisoners were convicted were quite distinct from the more serious sort of outrages, and partly to the wish to heal the bitter feud by a conciliatory act instead of heaping fuel on a popular sentiment of unequal dealing which showed signs of bursting forth into a fierce blaze.

Matters rested here for some years. The old trouble made a sporadic reappearance from time to time, and occasionally a serious outrage was perpetrated. A non-unionist saw-grinder was shot in 1854, and an attempted gunpowder outrage occurred simultaneously, these events being accompanied by a shower of threatening anonymous letters.² Five years later an attempt was made to blow up a house in which

¹ *Sheffield Independent*, April 1, 1848.

² *Ib.*, June 10, 1854.

James Linley, a saw-grinder, was living. In December, 1861, another attempted gunpowder outrage was directed against a cutlery factory, and in numerous instances gunpowder was placed in the trough of a grinder who was obnoxious to the union, causing an explosion when the sparks from his work ignited the powder, and often causing a serious risk of blindness to the victim.

These evil practices became still more frequent during the years 1865-6, especially among the saw-grinders, and in October, 1866, there occurred a serious explosion in the house of a saw-grinder named Fearnehough because he persisted in working as a "knobstick" for a firm whose saw-grinders and handle-makers were on strike. Fearnehough's house was blown up by means of a can of gunpowder placed in the cellar and ignited with a fuse. A reward of no less than £1,240 was offered,¹ but even this failed to bring about the discovery of the offender, although, as afterwards appeared, a number of persons were fully cognizant of the particulars, and furthermore it was shown that the comparatively small sum of £20 had proved a sufficient inducement for the actual perpetration of the crime. This was indeed a striking evidence of the strength of the bonds of loyalty and mutual fear which united the conspirators.

After this occurrence there arose a vehement public demand for the fullest investigation and for the discovery and punishment of the offenders. This demand

¹ The sum was made up as follows: the Manufacturers' Association, £1,000; the Government, £100; the Organized Trades, £100; the London Carpenters, £25; the Saw Grinders, £10; and William Broadhead, £5.

was supported not only by the employers and by the Town Council, but also by the great body of trade unionists, who bitterly resented the imputation cast upon their movement, and, strong in their individual sense of innocence, looked forward with calm confidence to the complete vindication once and for all of the whole trade union system. The representatives of labour organized a strong defence committee, while the masters and the city fathers on their side took steps actively to invoke the aid of the Government. The Government had already contemplated the institution of a comprehensive commission of inquiry into trade union matters, and in February, 1867, the commission was actually issued. Shortly afterwards the Commission was armed with special powers by Act of Parliament,¹ and in response to the urgent local demand special examiners were nominated by the Commission and appointed by the Home Secretary, to whom was entrusted the delicate task of conducting a special investigation into the nature of the outrages which had occurred in Sheffield during the previous ten years, and the complicity of the trade societies in these occurrences. The special examiners appointed for this purpose were William Overend, Q.C., George Chance, and Thomas Irwin Barstow, and the inquiry which they conducted, memorable and sensational as it proved, was opened in Sheffield on June 3, 1867, and lasted five weeks.

The Commissioners were empowered not only to compel the attendance of witnesses and the production of books and documents, but also to enforce full disclosure by witnesses of facts within their knowledge, even though they should thereby be themselves

¹ 30 Vict., c. 8.

incriminated. As a compensation for the employment of this exceptional authority, the examiners were directed to grant certificates of indemnity against all criminal or civil proceedings which might arise from disclosures so made, where they were satisfied that the evidence had been given honestly and without reserve. Never before had a similar legal immunity been guaranteed to the perpetrators of crimes such as robbery, arson, and even murder. The courage and statesmanlike wisdom displayed by this exceptional treatment were, however, fully justified by the sequel. The first week of the inquiry was indeed inconclusive. Cases of rattening were investigated and the complicity of trade union officials sufficiently established. But the mystery which surrounded the more serious cases of trade outrage remained undisputed and apparently impenetrable. The fullest use of the examiners' powers failed to defeat the conspiracy of silence maintained by the criminals and their accomplices.

On the seventh day a miserable wretch named Hallam, a saw-grinder, was placed in custody for contempt of court because he stubbornly refused to give the name of an accomplice in an act of rattening or to implement a confession previously made. After four days' solitary confinement in the police cells he was brought back into court prepared to tell all he knew. He admitted various cases of rattening: he confessed to having been responsible for blowing up Wheatman and Smith's saw factory with the help of Samuel Crookes, another saw-grinder: he finally acknowledged that he and Crookes had caused the death of James Linley by shooting him with an air-gun, Linley being a saw-grinder who had persistently refused to respect the union's regulation restricting

the number of apprentices he was entitled to employ. The most important feature of Hallam's evidence, however, was that he implicated Broadhead, the secretary of the Saw Grinders' Union, as instigator and paymaster for each of these crimes. Broadhead, owing to his dominating personality, was one of the most prominent labour leaders at that time, and had been secretary to the saw-grinders for twenty years. The pose of sympathetic innocence confidently anticipating complete vindication which Broadhead as spokesman for the trade unions had hitherto assumed towards the inquiry was terminated with dramatic suddenness by Hallam's confession. His society had been prominent in demanding vengeance on the instigators of the outrages, and had carried the policy of bluff so far as to offer a reward of £10 on their own account for the discovery of the perpetrator of the Fearneough explosion. Now the game of concealment was at an end, and safety could only be found in formal indemnity secured by complete admission. When Crookes was fetched and examined, Broadhead called out to him "Tell the truth, Sam," and on the following days each of them made full disclosure of the systematic promotion of outrages for which they had been responsible. Broadhead confessed to having himself instigated, and paid for with trade union money, not only Linley's murder but half a dozen instances of blowing up refractory members, several cases of shooting, hundreds of rattennings, and innumerable cases of intimidation during the ten years to which alone the attention of the examiners was directed.

The general method of procedure is sufficiently indicated by a minute of the saw-grinders' executive

dealing with the constitution of what was known as the Investigation Committee :¹

“That the Investigation Committee be elected every monthly meeting as usual. Their duties shall be to examine the arrears of all defaulting members and other matters ; and this committee shall be furnished with full powers from the society to take any and whatever steps this committee may deem necessary to compel payment of arrears, etc., and enforce observation of all rules and regulations by all this society’s members ; and with regard to any expenses incurred in carrying out their objects, the committee shall not be bound to make such expenses public to the body, but such expenses shall be met as the committee shall see best.”

This resolution was entered in Broadhead’s own handwriting, and he was principally responsible for carrying it out ; but while he admitted that the whole committee were parties to payments for rattening, he strenuously denied that any of his colleagues except his immediate accomplices had any knowledge of the more serious outrages, and asserted that the large payments made on account of them were abstracted from the funds of the society by means of false entries without the complicity of the committee.

The revelations thus disclosed concerned more particularly the Saw Grinders’ Union, which was shown by the evidence to have been responsible for most of the serious outrages from 1853 to 1866. Other branches were, however, implicated in a minor degree, especially the fender-grinders, the pen and pocket blade-grinders, the scissors-forgers, the scissors-grinders, the edge-tool-forgers, the edge-tool-grinders, and the scythe-grinders. The examiners found that out of some sixty separate trade societies only twelve

¹ June 20, 1865.

could be proved to be parties to outrages, nearly all of them, as will be seen, belonging to the grinding branches. This limitation is attributable in part to the fact that the grinders' working appliances were the easiest to ratten : and, in fact, so much so, indeed, that other branches were in practice commonly rattened vicariously through the grinders. If, for example, it was desired to enforce payment of dues by the forgers, the grinders were often rattened in order to stop their work and so bring pressure to bear on the former : in such a case the forgers' society, which had initiated the procedure, was responsible for indemnifying the grinders for loss of time and earnings. Occasionally this procedure was inverted, the scissors-forgers or the workboard hands, for example, stopping work in order to coerce the scissors-grinders, but this was by no means so usual.

Broadly speaking, the result of the outrages inquiry was to vindicate trade-unionism in Sheffield, in the sense that the many grave crimes were shown to have been the work of a few clever and unscrupulous scoundrels such as Broadhead, and they were further shown to be utterly abhorrent to the great body of workers, even to those whose chosen officers were responsible for the outrages. It must also be remembered that trade-unionism in Sheffield both before and since has produced many leaders of the highest type, and that even at this unhappy epoch the principal leader of the local labour movement was not Broadhead but William Dronfield, secretary to the Sheffield printers, to the United Kingdom Alliance of Organized Trades, to the Sheffield Association of Organized Trades, and to the Sheffield Trades Defence Committee, the body entrusted to reply to

the accusations brought against the local trade societies. The name of William Dronfield, whose work and whose character were never impugned, but on the contrary commanded universal respect and admiration, deserves to be set against that of Broadhead, whose crimes continued to be made the pretext for unqualified condemnation of trade-unionism in general.

CHAPTER XII

THE SECTIONAL TRADE SOCIETIES

THE dominating feature of labour organization in the cutlery trades is the multiplicity of the individual sectional trade unions by which the labour interests of the whole body of the cutlery workers are represented. In the early days of the labour movement it was natural and indeed inevitable that trade-unionism should proceed on sectional lines; but the persistence of this type of association into the nineteenth century furnishes a striking manifestation of the conservative adherence to early tradition and trade custom which characterizes the cutlery industry, not only in this question of labour organization, but on every side of its activities. It seems worth while to give a brief survey of the history of these societies individually, so far as this can be gleaned from the scattered and often fragmentary evidence embedded in parliamentary inquiries and from other more ephemeral or less accessible sources. Few of the societies themselves possess records extending over any considerable length of time, for, as will soon become abundantly manifest, their activities have, as a rule, been merely sporadic and transitional. For a few years, occasionally even for a decade or two, an individual society may from time to time have

enjoyed a full measure of power and prosperity, only to find itself submerged beneath the black waters of adverse trade, or shipwrecked as the result of some unsuccessful dispute.

The reader will be struck not only by the instability of the individual society, but still more by the paucity of its membership. Small numbers, of course, do not necessarily signify ineffectiveness, for it must be remembered that in many branches the total numbers of those occupied were comparatively trifling. A membership of not more than one or two hundred is, however, likely to mean financial insecurity and unskilful management, owing to the necessarily meagre character of the resources available in such a case both of money and of directing ability.

At first sight it would seem surprising that an irresistible tendency towards consolidation, amalgamation, or, at least, federation has not long ago reduced the cutlery trade unions to one-tenth of their former number, in harmony with the progressive tendencies of British trade-unionism in general. Two generations ago the labour movement in the cutlery trades ranked as high in the trade union world as that obtaining in any other industry; indeed, owing to the prestige of its early start and its long tradition of industrial solidarity it could claim a kind of traditional seniority. Now it has become as a whole inefficient, antiquated, and well-nigh powerless in comparison with the great modern trade unions which give the tone to the British labour movement of to-day. Probably the explanation of this relative decline is to be sought partly in the slow rate of trade expansion in the cutlery industry

and still more in the decay of manual labour in consequence of the gradual and painful transition to machine methods of production. At all events, it is unfortunately true that during the last forty years the organization of labour in the cutlery trades has failed to respond to the modern spirit, and is to-day almost as much of an anachronism as is the form of its industrial organization. Instead of strong federations or amalgamations, the sectional plan of organization is still rigidly adhered to, and the progressive breakdown of the old trade methods has steadily weakened their individual influence and effectiveness. There are still (1910) some seventeen societies in the various branches of cutlery, six in the file trade, and seven in the tool trade, these thirty unions having between them an aggregate membership of only 4,000. Among this number there are fourteen unions of forgers, with an aggregate membership of less than 1,500, only one of them having a permanent secretary ; there are also ten grinders' societies, of which only three have paid organizers. In the file trade the cutters are the only one of the four branches who support a permanent secretary.¹

When these societies were strong they were often inefficient and reactionary, and probably the complaints of the masters (in 1860) that they tended to hinder improvements, to stereotype the trades, and to throw great difficulties in the way of any manufacturer who wished to make head against intelligent foreign competition by introducing new processes or patterns or fresh labour-saving devices and more economical organization, were not without solid

¹ C. Hobson, "The Metal Worker," vol. ii., 1908, p. 55 ; vol. iii., 1909, p. 65.

foundation.¹ To-day, however, there are very few that can be regarded as really effective agencies for trade control.

In the summary table given on the next page and in the subsequent detailed survey an attempt has been made to indicate the strength of the various societies at different periods. Though care has been taken to obtain the best contemporary evidence in each case, the figures must be accepted with some reservation. The numbers giving the membership of individual societies can only be known by their respective officers, and are obviously not likely to be understated: on the other hand, the total number of adult workers engaged at any time, where such is stated, can never be more than a rough estimate at best, and is further prejudiced by a tendency to refuse to recognize any existing workers save such as are fully qualified according to the trade union standard.

Very few fresh price-lists have been recognized in Sheffield since 1873, and many of those nominally in force are subject to large and variable discounts. The lists of the file cutters and forgers, the scissors grinders and forgers, and the razor-grinders and razor-scale-pressers date from 1872-4, being generally revised editions of earlier lists. Thus for example, the Scissors Grinders' "General Statement of Scissors Grinding, Polishing, etc.," is based on the list of 1844; the fork-grinders' list of 1878 is a reprint of that of 1810, and the pocket-blade-grinders' list little more than a reprint of that of 1831. Many of the lists have been unamended for an even longer period. The table-blade-grinders' list dates from 1859; the table-blade forgers' and hafters' lists from

¹ See resolution of Sheffield Chamber of Commerce, July, 1860.

TRADE UNION MEMBERSHIP.

| NUMBER OF ADULT WORKERS IN TRADE SOCIETY. | | | | | | TOTAL NUMBER OF ADULTS OCCUPIED IN TRADE. |
|---|-------|-------|--------------|-------|-------|---|
| | 1843. | 1846. | 1860. | 1890. | 1910. | 1910. |
| <i>Table Knife Trade—</i> | | | | | | |
| Forgers and strikers (hand) | — | 710 | — | 300 | 174 | 200 |
| Grinders | 800 | — | 600 | 650 | 150 | 750 |
| Hafters | — | — | 600 | 300 | 302 | 800 ¹ |
| <i>Spring Knife Trade—</i> | | | | | | |
| Forgers... .. | — | — | — | 190 | 136 | 222 |
| Grinders | — | — | 1867. 650 | 200 | 230 | 600 |
| Cutlers | — | — | — | — | 420 | 1,800 |
| <i>Razor Trade—</i> | | | | | | |
| Forgers | — | — | 100 | 140 | 54 | — |
| Grinders | — | — | 1865. 290 | 360 | 200 | — |
| Hafters | — | — | — | 180 | 66 | — |
| <i>Scissors Trade—</i> | | | | | | |
| Forgers... .. | — | — | — | 140 | — | 160 |
| Grinders | — | — | — | 150 | 122 | 200 |
| Workboard hands ... | — | — | — | 40 | 60 | 160 |
| <i>Steel Fork Trade—</i> | | | | | | |
| Forgers and Grinders ... | — | — | — | 220 | 60 | 120 |
| <i>Scythe and Sickle Trade—</i> | | | | | | |
| Grinders | — | — | 126 | 60 | 30 | — |
| <i>File Trade—</i> | | | | | | |
| Forgers (hand)... .. | — | — | — | 300 | 60 | 150 |
| Grinders | — | — | 204 | 240 | 195 | 250 |
| Cutters (hand) | — | — | — | — | 100 | 1,900 |
| Hardeners | — | — | — | 130 | 110 | 200 |
| <i>Saw Trade—</i> | | | | | | |
| Makers | — | — | 370 | 150 | 290 | 310 |
| Grinders | — | — | 188 | 55 | 72 | 134 |
| Handle makers | — | — | 136 | 124 | 61 | 70 |

¹ Not including team workers.

1846 and 1844 respectively. The saw-grinders and smiths work on lists of 1859 and 1844; the scissors workboard hands on a list of 1817, and the razor-forgers still attempt to adhere to the lists of 1810.

It is, of course, impossible that such lists should be adapted to the present-day needs of the industry, and the fact is that few, if any, are literally adhered to at the present time, being in most cases subject to severe discounts, even when they are nominally in force.¹

I. THE TABLE KNIFE TRADE.

The table-knife trade comprehends about one-third of the cutlery workers, and contains four separate unions representing the several branches—an attempt to amalgamate the various sectional societies by means of a Table Cutlery Federation established in 1891 having proved abortive.

Table Blade Forgers and Strikers.—This union, which has hitherto been confined to the exclusive and diminishing body of forgers by hand, is one of the few effective organizations to be found in the trades at the present time. It has enjoyed a continuous existence since 1843, and its price-list, which is still in force, dates back to 1846. The existence of a still earlier society is proved by an attempt in 1839 to enforce a general increase through the trade by carrying out a programme involving a succession of strikes against individual firms, the advance to be in this way extorted from one firm at a time,² and then used as a lever against others.

A general dispute in 1843—a determined struggle of nine weeks' duration—was the outcome or the cause

¹ See Appendix XV for full list of cutlery workers' Price Statements.

² *Sheffield Iris*, February 19, 1839. This policy, which was frequently adopted, was on a later occasion quaintly spoken of as "the graduating principle."—*Iris*, November 12, 1846.

of the formation of the reconstituted society (most societies were thus inaugurated by means of a strike), and secured it a propitious beginning with an improved scale of payments.¹

The society's strong position at the present time in the face of adverse circumstances is due to the fact that it embraces a very large proportion of the efficient workers. The hand forgers have been steadily dwindling in numbers for the last two generations, owing to the steady growth of machine forging, and their only hope of survival lies not so much in the maintenance of a high standard of skill and workmanship as in the ability of the hand-forged goods to preserve their ancient reputation unimpaired in spite of the steady encroachments of the steam hammer. It is a double-handed trade, and the forger employs and pays his "striker" or "butty" at the rate of 1s. 10d. out of every 4s. earned.

Earnings are based on a curious system of reckoning which is doubtless the survival of an ancient system of piece-work payment. A standard quantity or count of each article is fixed by the price-list as a "day-work" (pronounced *d'work*), varying according to the labour involved. Such a day-work is the unit by which the price of labour is determined. Thus in the "balance Waterloo" pattern three and a half dozen dessert blades form a day-work, whereas in a common quality knife with a plain round tang six and a half dozen dessert blades are required to make up the unit. A good workman will usually make two or three day-works in a normal day, a fact which reflects the improvements which have taken place in the preparation of the steel from

¹ *Sheffield Iris*, September, October, November, 1843.

which the blades are forged. Originally the forger had to slit his own iron and reduce it to the size required, and until 1820 he used tilted steel instead of rolled as at present ; now he is supplied with rods precisely adapted in size and shape to his purpose. Butchers' and cooks' knives are not reckoned by the day-work, but are counted individually. The forger's work is divided according to quality into "Country Trade" and "Foreign Trade." For the former, which is superior work, the standard rate of payment is 4s. per day-work ; for the common or cheaper goods the rate is 3s. per day-work. Out-workers receive an additional 6d. per day-work to compensate for the necessity of finding their own tools and hearth-room.

In 1830 the trade numbered 470 men ; in 1844, 700. By 1890 this number had fallen to 330, of whom 300 were members of the union. In 1910 even these numbers had been reduced, and there were but 174 members out of a total of 200 workers.

Table Blade Forgers by Machine.—In this branch there is a young society known as the Goff-blade Forgers' Trade Society, which is not as yet strongly established either in numbers or influence. They are, however, likely to unite with the hand forgers, to the mutual benefit of both sections.

Table and Butcher Blade Grinders' Association.—This society dates from 1890, and no detailed records of the earlier unions in this branch have been preserved, though one such was founded in 1847. That these previous societies were powerful not only in numbers but also financially is shown by the fact that in the period from November, 1830, to 1842, this union paid £20,630 in out-of-work benefit

to its members.¹ The earliest price-list for this branch that can be traced is dated 1853, and the more advanced list of 1859 is still the nominal basis of payments for work—a further list issued in 1872 having failed to secure recognition. The rates actually paid are considerably lower than the list prices, a discount of 5 to 10 per cent. being commonly enacted for the best or “Country” work, while for the commoner “Foreign” work the deductions range from 25 to 50 per cent. All prices are nominally for dozens (twelves), but sometimes blades are reckoned by thirteens, sometimes at 27 to the two dozen. Some two-thirds of the number employed are, however, on time wages, and the membership of the Union is not more than 150 out of a total of about 900 adult grinders. The corresponding proportion of 650 out of 740 men in 1890 shows the decline that has taken place. Earlier societies had often been in an even stronger position; in 1843, for example, there were 800 grinders in the union, and again in 1860 there were 600 members out of a total of 700 workers.

Table and Butcher Knife Hafters' Trade Society.—This union is the descendant of numerous similar organizations. The earliest society recorded in this branch was established in 1844, with the active co-operation of the masters. The town was organized in twelve districts, each with its own committee. The headquarters formed a labour exchange, utilized by masters and men alike. The whole trade of 1,200 men was organized, and there were two paid permanent officers. The society's method of putting pressure on masters who refused to pay standard rates was by refusing to supply men until the difficulty was

¹ “On the Evils of Trade Unions,” by a Merchant, 1846.

rectified. This association of masters and men survived, despite great fluctuation in the trade, until 1859. Another society in this trade lasted from 1871 to 1878; another was established in 1887, but survived a few years only. The present society dates from 1902, and has endured longer than any of its numerous predecessors which can be recollected. A price-list was issued in 1810, and revised lists appeared in 1844, 1849, 1856, 1859, 1872: the standard list to-day is nominally that of 1844, which latter contains an address to employers explaining that this revision is to take the place of the earlier lists, and so to obviate the confusion due to imperfect distinction between "Country" and "Foreign" work. The subsequent lists were not recognized by the employers, and remained ineffective in consequence. The official prices were adhered to until about 1875, since which time varying discounts have been conceded, and a deduction of 10 to 15 per cent. is now usual. Good firms nominally pay the list prices less 10 per cent. discount, but a great deal of work is reckoned as "special," and done at lower prices on account of new features.

The numbers employed in this branch show a great diminution in the last fifty years. In 1830 the number was 1,130; in 1844 there were 1,200 adults employed; in 1852 the total number employed was estimated at 1,700; in 1872 there were 1,100; in 1890, 850 men and 350 to 400 boys, of whom about 200 men and as many boys were engaged in team work not recognized by the Union. The number of men now occupied in the trade proper is about 800, of whom 300 belong to the society.

Table Cutlery Federation.—An attempt was made

in 1891 to bring about a federal union between the various sections of the table-knife trade. It did not, however, displace the sectional organizations, and so proved ineffective and failed to survive.

II. THE STEEL FORK TRADE.

This little independent trade, which at one time could boast of a considerable output for ordinary domestic uses, has dwindled away in consequence of the successful competition of nickel-silver and electroplate substitutes, until it now retains only the manufacture of carving forks and steels, and remnants of a trade in the cheapest grades of other goods. The workers are mainly little master out-workers who employ a few journeymen, sometimes on time wages and sometimes on piece-work, both masters and men being included in the membership of the trade club. The little masters buy the steel, forge the forks, get them ground and polished, and sell to manufacturers of table cutlery ready for hafting. The trade has usually been carried on in the country districts near Sheffield.

Steel Fork Makers and Grinders.—This trade is the only example in Sheffield of a long tradition of composite labour organization, grinders as well as forgers, and in addition to these the little masters themselves, being included in the membership of the various societies which have existed from time to time—one of them dating back as long ago as the year 1810. These societies have been devised to protect the trade against their powerful customers, the table-knife manufacturers. Consequently they have usually had two official price-lists, one a selling list for the little masters, the other a working list for forgers and

grinders. Even before the effective introduction of white-metal substitutes their occupation was rendered highly precarious by reason of the competition of worthless and brittle goods made of cast metal, which abuse has prevailed at different periods. Moreover, the fork-grinders' trade has suffered from the drawback of being notoriously one of the most deadly of the whole group of Sheffield industries.

A strong society was established in this trade in 1843, when it could claim more than 300 members, one-third of whom were grinders. The following year it was able to borrow £700 to assist its funds, which sum was, however, soon exhausted and had to be made good by an individual guarantee of £5 from each member.¹ Another society seems to have lasted from 1865 to 1879; and several others have been in existence from time to time. In 1860 the then society included 84 members out of 150 workers in the trade. Price-lists were issued in 1810, 1866, 1878, and 1889. The last organization was established in 1889. Now this society, too, is virtually moribund, and only numbers some 60 men.

III. THE SPRING KNIFE TRADE.

Pen and Pocket Blade Forgers' Protection Society.—This organization was established in 1872, in succession to earlier societies whose records have perished. The earliest price-list that can be traced is dated 1820 (though one was issued in 1810 or earlier). This list is called "Prices of Forging Pen Knife Blades," and insists that all wages are to be paid in money, and that the forger shall be provided

¹ *Sheffield Iris*, December 9, 1847.

with steel by his employer. In 1844 a "Revised List of Forging Pen and Pocket Knife Blades of 1810" was issued, which represented an attempt to re-establish the high prices of the former date. Under the terms of this list out-workers were to be entitled to receive an addition of "3d. per gross for pocket blades, and 2d. do. for pens," as compensation for finding their own hearth-room and tools. In the list as subsequently revised in 1866 this allowance was altered to one penny in the shilling for all classes of work, and this provision was again repeated in the last list issued—that of 1891. These lists show a progressive increase so far as they are comparable.

In 1824 the workmen of Heeley, near Sheffield, issued a list of prices for both forgers' and cutlers' work, which is instructive as showing that the scope of the trade made it possible for one man to combine these two branches. A "Regulation of Prices for making Scales and Springs" was issued in 1810, and a reprint of this list appeared in 1825, together with a supplementary "Statement of Prices of Spring Forging in the Chine-Lock and Sneck Line, agreed to in February, 1825," under which $\frac{1}{2}$ d. in the shilling is to be allowed to out-workers for hearth-room. In 1843 there were 150 scale and spring forgers and 300 blade-forgers, and a few years later the two classes numbered 540; but in 1890 the number had fallen to 330, and in 1910 to 220, of whom 136 belonged to the Union, this being a large increase over the membership in recent years. The in-workers now pay for their gas, but work on employers' tools; the out-workers generally, though not always, receive an extra allowance for tools.

The increase of machine methods has been responsible for the diminution in the numbers employed, and for the difficulty of maintaining prices. There is a serious tendency to substitute unskilled for skilled men.

Spring Knife Grinders and Finishers.—The existence of a manuscript price-list for pen and pocket blade-grinders, entitled “Grinders’ Statement to take place January 18th for the 1810 Statement,” is sufficient indication of the existence of a strong trade society in this branch as early as the beginning of the nineteenth century. This list contains an elaborate classification of about a score of different types of work, and includes the usual emphatic proviso against truck payments. Its complexity points to its being an elaboration of an earlier list, and such lists were doubtless in existence a generation earlier. A pathetic appeal issued by the pen-knife-grinders in 1824, when large numbers of them had been thrown out of work in consequence of a strike among the cutlers, shows that their society, which had been re-established in 1820, had failed to enforce the former scale of payments. It further enters a bitter protest against the hardship of being paid in “tea, tobacco, red herrings, and other articles of an inferior kind.”¹ The 1810 statement probably marks the high-water mark for grinders’ wage-rates, since the separately issued lists for pen and for pocket blade grinders of 1831, which were recognized by the masters, were 25 per cent. under the 1810 standard; and though prices rose again during the boom of 1835–6, the statement put forward in 1836 was never accepted or established. Then

¹ *Sheffield Iris*, June 1, 1824.

followed the calamitous depression of 1842-3, which plunged the workers deeply into the debt of their employers, many of them being obliged to pawn their future labour, in accordance with the ancient trade custom. During this period the trade suffered severely from the production of worthless goods, the grinders in particular being injured by the practice—which had originated about 1820—of imitating on cheap goods the high finish which had hitherto been distinctive of fine goods; this innovation destroyed much of the trade in roughly finished goods, and, worse still, discouraged the production of goods of the first quality.¹ These years of suffering caused all branches of the spring-knife trade to exhaust their funds. Consequently the unions were dissolved, and many of the men were driven to set up as small masters, selling to merchants and hawkers, and so further lowering the prices, quality, and repute of their goods.

The “Spring Knife Grinders’ Protection Society” was again established in 1844, its objects being, as recorded in a manuscript account book, “to grant relief to all its members that is out of work; that none may have the painful necessity of applying for relief from the parish, or comply with the unreasonable demands of our employers or their servants.” They also made a rule “that we do not work on Tuesday afternoons,” doubtless as an endeavour to mitigate the over-production from which the trade was still suffering. Trade at this time was recovering from the very low ebb to which it had sunk in the preceding years, and the masters co-operated with the men in the attempt to re-establish a reasonable wage-

¹ See below, Ch. XIII. § ii.

scale. The former even agreed to pay weekly subscriptions to men unable to find work at the specified rates, and to form a reserve fund for those masters who could not obtain remunerative orders.¹ The society was however, again dissolved in 1847, and for twenty years pursued a chequered career, sometimes moribund and sometimes striving for rehabilitation. In 1867 it attained a more secure foothold, and claims a continuous existence since that date down to the present time. A list issued in 1901 gives the standard rates for work now nominally in force, but it is much less complete and elaborate than the earlier statements.

In 1843 the grinders numbered 400 men. In 1857 there were 685 men and 600 boys in the trade, and in 1865 there were 650 men in union and some outside. In 1890 there were 700 men and 200 boys employed, 200 belonging to the union. In 1910 only 230 men were members of the society out of 600 adult grinders. There are now a number of men on day wages, and there is great variation in the price of work paid by different firms. A strike in 1891 against a reduction of increased prices secured in 1890 lasted seven months, and cost the union £800 in strike pay. The result of this dispute, however, was the maintenance of the former scale of prices.

Spring Knife Cutlers.—This weak and poverty-stricken society represents the largest single branch in any of the cutlery trades, the number of workers being estimated at 1,800 or more, of whom only about 400 are organized. In 1890 they returned their membership as 1,800 out of a total of 2,200 men, which

¹ *Sheffield Iris*, October 24, 1844.

shows the diminution that has taken place in the past generation. This is a trade in which out-workers are still found in considerable numbers, and long though irregular hours are worked. Most of the work is nominally piece-work, but is based on tradition rather than on actual price-lists, and varies from one firm to another. There is further a large and increasing use of subdivision inside the factories, though this team work is strongly objected to by the efficient worker, and is not so prevalent as in the case of the table-knife cutlers.

The printed price-lists go back to 1810, in which year was issued a "Statement of Pen and Pocket Knives ; all twelve knives to the dozen, and a penny allowed on each shilling for files." The general prosperity of 1814 led to an increased scale being demanded, and a fresh list was issued in that year with the specific anti-truck regulation that "no articles whatever are to be put off instead of money." This scale, however, was not maintained, and in 1820 fresh supplementary lists were issued for "Chine Brass Shoulder Pocket Knives, all thirteen to the dozen, and one halfpenny allowed on every shilling for files." In 1821 there were 1,600 cutlers on strike for the 1810 statement, that list having been recognized for many years by the regular manufacturers. This demand was, however, opposed by the joint action of the masters under the "Mercantile and Manufacturers' Union," which had been established in 1814. The distress continued through the succeeding years, large numbers being out of work in 1824, and the discounts from the 1810 list having risen at the same time to between 30 and 50 per cent. During the great depression of 1842 and

succeeding years the union was dissolved, and was apparently not re-established until 1850, when fresh rules were adopted designed to guarantee a conservative economy in financial administration, the disastrous experiences of the trade engendering a timid and apprehensive spirit. No money was to be spent on disputes, and no expense of any kind might be sanctioned except by a two-thirds majority of the membership. All coercive tactics were disclaimed, and the contributions limited to the modest scale of one penny per head per week.¹

Further price-lists were issued in 1840, 1872, and again in 1900, the latter being for spike knives, but these did not obtain permanent recognition, and the list still nominally in force is that of 1810, reprinted with supplement in 1872. As a matter of fact it is recognized by only one or two firms, and is commonly disregarded. An alternative list of great detail and complexity, issued in 1902, is now on its trial, but is not likely to become firmly established. The work has changed in character and in detail so largely that many of the data are inapplicable or even unintelligible as applied to the current varieties of knife. In most cases each firm makes its own prices for the ever-changing types of wares by agreement with its men. The earnings of the men employed vary very greatly, and are for the most part miserably poor for a skilled trade. Exceptional individuals receive as much as 35s., subject to the usual deductions, but the more usual scale is from 18s. to 25s., and the minimum is even less. The trade has suffered severely ever since the McKinley Tariff checked the American export, and inquiries about good times in the past are met by

¹ *Sheffield Independent*, January 19, 1850.

the citation of the tradition of great prosperity in 1863, after the American Civil War, and again during the Franco-German War. A decade of indifferent trade has reduced scores of men to earnings less than those of an efficient labourer, while many have left their trade and taken to labouring. Despite the repeated declarations of the statements that a dozen shall mean twelve knives, a cutler still commonly makes thirteen and in many classes of work fourteen knives to the dozen,¹ and replaces defective ones into the bargain. In some very common work a man will make three or even four gross of knives in a week, though if working on a rather better article seven to nine dozen will be a big week's work, and in goods of a higher class five or six dozen, but the price of the former sort is sometimes paid as little as 5s. or 6s. per gross, while for the poorest knives of all only 3s. 9d. a gross is paid.

The present society, known as "The Operative Spring Knife Cutlers' Union," was formed in 1889, its declared objects being "to secure a fair remuneration for labour, to improve the conditions under which men work, and in every possible way to better the social and moral condition of its members." During the next two years there were numerous disputes, which cost the society £2,346. Since this time lack of cohesion and paucity of membership has prevented the society from exercising any substantial authority.

Among earlier associations of workers in this branch may be mentioned a federation of spring-knife

¹ The ambiguity of the term "dozen" in Sheffield is quaintly illustrated by a decision of the magistrates in 1861. "We are of opinion that the word 'dozen' in this agreement means fourteen knives for 7s. 8½d"—*Sheffield Independent*, March 30, 1861.

cutlers, blade-forgers, and scale and spring forgers, founded in 1831 to enforce the price-lists established in that year. This organization embraced all branches of the spring-knife trade except the grinders, being established, according to the articles of association, by the members of these trades, "for the purpose of mutually benefiting and supporting each other and for promoting their respective interests" in the several departments of the trade. The contributions were to be at the rate of 1s. per member per week, and the unemployed benefit was fixed at 7s. per week per man, with 2s. per week for his wife and 1s. 6d. per week for each child.¹ Yet another society was founded in 1872 and lasted a considerable time; but of this little is known.

Spring Knife Trade Federation.—An attempt to bring about a federal union of the trade societies concerned in the production of pocket cutlery—namely, the pen and pocket blade forgers, the pen and pocket blade grinders, and the spring-knife-cutters—was made in 1890. This effort, however, though it met with temporary success, soon proved abortive, and had to be abandoned.

Handle and Scale Pressers and Cutters.—The trades which concern themselves with the preparation of material for the handling of table and spring knives and other cutlery implements, trades formerly commonly carried on by little master out-workers, have from time to time been organized in a number of small sectional trade clubs, distinct societies for each subdivision of the trade often existing side by side. Among these may be mentioned the Bone Haft and

¹ "Abstract of Articles of Agreement between the Pen and Pocket Spring Knife Cutlers," Sheffield, 1831.

Scale Cutters, the successors to similar societies which reach back at least to 1843, a price-list of which date has survived. The latest society was established in 1889, but some years ago united with the Handle and Scale Cutters' Society, founded in 1894. This latter society has since been dissolved, and the parallel society among the pressers has also disappeared. These efforts at fractional organization are only remarkable for their persistent recrudescence, since they surely represent the *reductio ad absurdum* of trade unions under modern conditions.

IV. THE RAZOR TRADE.

Razor Blade Forgers.—There was a trade society among the razor-forgers as early as 1810, when a price-list was drawn up which is still regarded as the standard statement, though advances secured by means of general strikes in 1866, 1874, and 1883 have raised current prices above the level of the earlier year. As with the table-blade-forgers, the unit of work is a "day-work," the number of blades in a day-work varying from 18 to 60 according to size and quality. A good workman can now make from 16 to 20 day-works in a single week. Part of the trade is double-handed, in which case the forger provides tools and pays his striker a fixed proportion of the price received. The regular rate is 4s. per day-work when cast steel is used, and 3s. 6d. per day-work for patent steel, the striker receiving 1s. 7d. or 1s. 4d. respectively. Most of the work is now in the hands of in-workers, who work on their employers' tools and allow a reduction from this list price of 4d. in the pound on this account.

The present society was established in 1848. In 1860 the union had 100 members, and in 1890 there were 140 members out of 155 adult workers; in 1910 the membership had fallen to 54, however, and the trade is threatened by the substitution of drop-forged razor blanks for the hand-hammered article.

Razor Grinders.—The present society, known as the “Razor Grinders’ Protection Society,” was founded in 1862, and has had several predecessors. Their price-list dates from 1873, and is itself a revised edition of a list dating back to 1810. Prices have, of course, fluctuated greatly at different periods. In 1814 an increased scale of payment was secured, but this advantage was completely lost in 1831, and in the early forties a discount of 50 per cent. prevailed, the effects of the depression lasting for twenty years. The number of adult men employed in the trade increased rapidly from 96 in 1810 to 275 in 1842,¹ since when it has grown to about 400. The union membership was 290 in 1865, 360 in 1890, and about 200 in 1910.

In 1865, when the union was at the height of its power, a dispute arose over the refusal of a master to dismiss a non-union workman. The dispute became general, and the forgers joined hands with the grinders. The masters on their side were also united, and as a pledge of their fidelity to each other made individual deposits in a central fund. The “little master” razor manufacturers, having no capital to support them through such a crisis, were subsidized by the substantial employers at the rate of £2 a week each. In spite of these efforts, however, the masters were

¹ G. C. Holland, “The Mortality, Sufferings, and Diseases of Grinders,” 1842.

obliged to capitulate eventually, and had to pay a fine to the trade union as the condition precedent to the enrolling of the non-unionist workman to whose engagement the union had objected in the ranks of the society.

The members of this trade constitute a fairly prosperous class, and many are highly skilled men earning high wages. The advent of machine grinding has not as yet made serious inroads on their prosperity.

Razor Hafters.—The “Razor Hafters’ Trade Protection Society” was established in 1871, and was reorganized in 1892. There are 66 members out of a body of some 200 workers. A number of the men are out-workers, and there are a few small masters. They have no recognized, uniform price-list, and the organization cannot be said to be effective. In 1890 they could claim 180 members and were in a comparatively strong position, but the society as it exists at present is an example of the utter inadequacy of the older form of small sectional organization under modern conditions. Nevertheless this society, like others of similar standing, has some historical interest, since its course can be traced far back into a dim past—reaching back, indeed, to 1814, in which year, as is shown by a manuscript price-list, which has happily survived the periodic obliteration of this small society, there was issued “A General Statement of Prices for Razors to commence the 13th day of January, 1814.” This list details the agreed charges for hafting, setting in, whetting, putting in shields, buffing silver rivets, and in addition to these the cutting and pressing of the scales; it thus includes the scale-cutter and presser’s work as well as the hafter’s as now distinguished. The list also contains the provision that “all dy’d and mock shall work fourteen to the dozen,”

which indicates the early origin of this method of counting in this branch.

Razor Scale Pressers.—The “Razor Scale Pressers’ Protection Society, Sheffield and Stannington,” is now moribund, but, like the former association, has represented a lengthy tradition of trade-unionism. This trade, becoming differentiated from the hafters’ during the first half of the nineteenth century, seems to have attained a separate organization about 1840, and in its modern form dates back to 1862. A revised and increased price-list was issued in 1876, which, however, suffered reduction in 1884. The trade is a poor and vanishing one, carried on mainly by a few out-workers.

Razor Trade Federation. — This association of grinders, forgers, and hafters, established in 1891, represents a small endeavour to bring about amalgamation among the small and inefficient sectional societies. It points to the beginning of a new movement, which if it succeeds is likely to terminate the separate existence of many small societies. This particular federation has not, so far, attained any striking success, and it may be questioned whether the more profitable form of amalgamation would not be horizontal rather than vertical; for example, an association containing grinders of all trades would be more powerful than a body representing the hafters, forgers, and grinders in a particular trade, and the former would be likely to secure greater solidarity and cohesion among its members.

V. THE SCISSORS TRADE.

The Scissors Trade has suffered more severely than any other from the encroachment of foreign competi-

tion and from inability to adjust the traditional industrial methods of cutlery manufacture to the economy of mechanical production. A bitterly contested strike of nine months' duration, which took place in 1874, may be regarded as the turning-point in the fortunes of the trade, a large proportion of which was then permanently captured by Germany; the ground thus lost has never been regained.

Scissors Forgers.—The hand-forged scissors is becoming a thing of the past, and the few workers who still linger in the trade are not likely to be succeeded by a fresh generation. A generation ago they were flourishing, and their trade society, established in 1864, was only finally broken up a few years ago. In 1890 it could boast of 140 members. There had been several active societies in this branch previously, and price-lists were established in 1819, 1844, and again in 1872, the latter representing an advance of $12\frac{1}{2}$ per cent. over the 1844 prices. A "Scissors Smiths' Benefit Society" was established as far back as 1791, and its efforts to raise the scale of payment led to criminal proceedings. Not more than 100 of these workers now remain, most of the work having passed to the steam-driven presses, which have been steadily encroaching for a generation. There is probably no more delicate or ingenious branch of the smith's art than the hand-forging of the circular bows of a pair of fine scissors from a rod of solid steel; yet no skill can save this fine old hand-trade from the aggression of its mechanical-produced rivals.

Scissors Grinders.—The Scissors Grinders' trade was one of the earliest to attain effective organization, and their combination to maintain prices resulted as early as 1790 and the subsequent years in successful prose-

cution by the masters, five scissors-grinders being sent to prison in 1790 because they came out on strike to enforce an increase of wages.¹

The masters on their side had combined to resist the workers' demands, and subscribed a fighting fund for prosecuting the strikers amounting to several hundred pounds. The grinders had published a statement of prices which they considered a fair standard (this, we may note, is the earliest price-list in Sheffield for the existence of which we have definite evidence), and the prices offered by the masters represented a heavy discount from this list.

The popular local poet, William Mather, enshrined this episode in verses of scathing satire, directing his tirade against the Senior Warden of the Cutlers' Company, who was the leader of the master scissors manufacturers :

"This Hallamshire Haman keeps blacks at command
To spread his dire mandates throughout the whole land.
Together they meet, and their malice combine
To form a most hellish, infernal design :
On malice, on mischief and tyranny bent,
Five poor, honest grinders to prison they sent ;
Though nothing they had of these men to complain,
But not paying discount for wearing a chain."

Since this time, though it has experienced the vicissitudes and fluctuations common to all the cutlery branches, it has usually been a prosperous and well-paid trade. Later price-lists were established in 1810, 1825, 1844, and 1873, that of 1825 representing the high-water mark, and the last being the list still nominally in use. As a matter of fact it is not strictly adhered to, and is subject to varying discounts

¹ *Sheffield Register*, September 24th.

from firm to firm. The standard rates are in many cases replaced by specific prices arranged by individual bargaining or established by a particular firm. The average payments are from 10 to 15 per cent. below the list prices. The present society—"The Scissors Grinders' Trade, Sick, and Funeral Society"—was established about 1862, when there were 250 men engaged in the trade, of whom 230 were members. In 1890 the adult membership was 150 out of 200 workers; it now embraces about 100 members out of a similar total. It is a skilled and fairly paid trade, earnings ranging between 30s. and 40s. per adult. About half the men are out-workers, but all pay wheel rent. There are not many datal men, except those who work for small master grinders, and some of these latter belong to the society.

Scissors Workboard Hands. — The "Provident Society of the Workboard Hands of the Scissors Trade" is the organization which includes the branches of the trade carried on by the filers, borers, and putters together. It dates from 1864, the preceding society having been dissolved some years previously. The official price statement goes back to 1817, but though still in use it is not adhered to without reduction. In 1831 we hear of these trades uniting in a "Bond of Agreement made for the purpose of mutually benefiting and supporting each other, and for promoting their respective interests in the Trade or Occupation of Scissors-smiths." The immediate object of this association was to enforce the payment of "the regulated statement of 1817," and their contributions were fixed at the rate of 1s. per man and 6d. per boy weekly. They published a formal declaration in which they stated that, "having considered that the

sole cause of reduction in the price of labour has been owing to disunion . . . the members of the scissors trade, constituting the three branches of Borers, Hardeners and Filers, and Finishers have organized and formed themselves into a society to be denominated the Scissors-smiths' Branches Association, which has for its great and lawful object the legally maintaining and supporting the price statement of 1817."¹

In 1890 the present society contained only 40 members out of about 200 adult workers, as compared with 190 out of 230 in 1867. There are now about 160 men in the trade and 50 women, but the membership is not more than 60. There are many little masters in the trade, which is a poor one, and team work is becoming common.

VI. THE SCYTHER AND SICKLE TRADES.

Formerly there were five separate societies in the scythe and sickle trade, each of the various branches—the scythe-makers, patent scythe-makers, scythe-grinders, sickle-forgers, and sickle-grinders—having its own union. In 1860 the three former each had a membership of about 55, while the sickle-forgers had 200 and the sickle-grinders 70 members, even these small numbers representing strong and inclusive organization. Now there is practically but one survivor, the sickle trade having become insignificant.

Scythe Grinders.—This little society, which is fifty years old, has still some vitality, though it has now only 30 members as compared with 60 twenty years ago. It was one of the first trades to abolish wheel rent, and now all payments are net, except those to

¹ Printed at Sheffield, 1831.

out-workers, who receive an extra allowance as compensation for their incidental expenditure.

VII. THE FILE TRADE.

File Forgers.—The workers in the file trade were thoroughly organized even in the eighteenth century, the File-smiths' Society being established as a benefit club in 1784. Their activities from 1810 to 1820 involved them in many prosecutions under the Combination Laws, and in 1822 they were forced to sustain a six months' strike costing £2,500.¹ In 1830 the society was reconstituted—a movement which apparently was the result of a reduction of wages enforced in the previous year. In 1835 they felt strong enough to demand the recognition of a greatly increased price-list in substitution for that of 1814, on which they had hitherto worked. A protracted strike resulted, the most extensive dispute which had hitherto occurred in Sheffield, which, however, yielded a partial victory for the Society in 1836, the men acknowledging the receipt of help from their comrades in Birmingham, Wolverhampton, Warrington, and elsewhere, as well as a sum of over £3,000 raised in Sheffield itself. In the public controversy arising out of this strike the employers' side was ably represented by William Ibbotson, of the Globe Works, a wide-minded and philanthropic master, who by the testimony of one of his own workmen was "a man of honour, humanity, and religion." Though a stalwart opponent of the trade union movement—an attitude dictated by the belief that "the natural distribution of profits is the law of

¹ Select Committee on Artisans and Machinery, 1824.

God, and any combination by masters or men to interfere with it is wicked"—yet he was endowed with a liberality of spirit which enabled him to view the claims of the workers with understanding and sympathy. Such a personality is worthy of commemoration. The masters as a body were thoroughly organized, and by acting in concert were able to enforce a general lock-out for eleven weeks in response to the partial strike which the union had instigated. The dispute issued in a compromise, the men securing an advance, and the masters the liberty to admit a considerable number of additional apprentices.¹ Unlike the other trades in the town, the file-smiths achieved remarkable success in maintaining prices throughout the depression of 1840-2, and their prosperity in subsequent years enabled them to secure a further advance in July, 1853, and to establish their society on such a secure footing that for many years it continued to be the largest, most prosperous, and best-managed trade organization in Sheffield.

The organization of the union at this time was on an elaborate scale. There were 17 district committees, 11 in Sheffield and 6 in adjacent villages; in addition there was a branch in Manchester with 100 members, and one at Newburn, near Newcastle, with 25 members. The central committee consisted of three members and two secretaries. In 1857 they had no unemployed on their books, and their accumulated funds amounted to £5,000. Contributions were graduated according to employment, the lowest scale being 6d. a week for a man and 2d. for a boy, the scale being doubled and quadrupled for those members who were respectively better and amply employed,

¹ *Sheffield Iris*, February 1 to April 19, 1836.

and in addition a levy of 1d. per head was made for the funeral of any member or member's wife. At the headquarters office there was a private room for the general committee and an office where unemployed members attended to answer the roll-call. The union claimed that its relations with the masters were friendly, and that its objects had always been accomplished by conciliation and without violence. In addition to out-of-work payments it granted superannuation benefit to members past work at the rate of 1s. 6d. per week for a single man and 2s. for man and wife.¹

From September, 1847, to May, 1849, the File-smiths' Union paid £16,980 in out-of-work benefit,² and during the years 1854-65 these payments reached a total of £51,045.³ In 1853 their trade funds were so abundant that they returned a bonus to their members; the following year this was repeated, each man receiving 20s. and each boy 6s. In 1854 they secured a further 10 per cent. advance in prices, the masters making the concession in return for a relaxation of the apprenticeship rules, the trade then requiring, in their judgment, the admission of 300 apprentices and new hands.⁴ In 1843 the file trade gave employment to 2,620 persons, including 700 boys and 100 women and girls. Among the adult workers were 520 forgers and strikers, 900 cutters, and 190 hardeners, these sections being covered by the file-smiths' union; in addition to these were the grinders, numbering 210. In 1865 there were about

¹ *Sheffield Independent*, May 19, 1849.

² *New Illustrated Directory* (Billing), 1859.

³ J. C. Hall, "The Trades of Sheffield," 1865.

⁴ *Sheffield Independent*, February, 1854.

700 forgers and strikers, 2,800 cutters, 250 grinders, and 200 hardeners, and the whole trade, including boys, women, and supplementary workers, employed more than 6,000 persons, having doubled in twenty years.¹ The union membership at this time was 3,500.²

In 1866 there occurred a serious strike and lock-out which affected the whole trade, a bitterly contested struggle which lasted for four months. It had its origin in a strike of the grinders for an advance, but the masters, who were strongly organized in a File Manufacturers' Association, responded by declaring a general lock-out. The real cause of the dispute was, however, the men's objection to the introduction of machinery into the trade, a question which had for some time been a ground of contention, on which no agreement had been reached, although Professor Fawcett had endeavoured to reconcile the opposing parties the previous year. Conferences of representatives of masters and men followed with the publication of statement and counter-statement. Arbitration was proposed—and rejected, since the feeling ran too high on either side. Finally, however, the dispute issued in a compromise by which the manufacturers conceded small advances to cutters and forgers, the grinders meanwhile resuming at the former scale of prices, and the opposition to machinery being withdrawn.³ Up to this time the File-smiths' Union had included not only the forgers but also the hardeners and the cutters, the two latter branches being practically identical. In 1862, however, the

¹ J. C. Hall, *loc. cit.*

² Trade Outrages Commission, Qu. 15867.

³ *Sheffield Independent*, February to October, 1866.

hardeners separated and formed a distinct society of their own, and in 1879 the forgers followed this example and became separately organized as the "File Forgers' and Strikers' Mutual Aid Society." Their price-list dates back to 1873, when it was issued to register the improvement in prices which had then been secured as compared with the previous statement of 1854, a still earlier list having been issued in 1843. Machine-forging of file blanks had been introduced before this society attained a separate existence, and ever since they have had to fight a losing battle against the steam hammers. At the year of its formation this society had 200 members. In 1890 it was even stronger, and contained three-quarters of the 400 men employed. In 1910, however, they only numbered 60 out of 150, and even this number was rapidly dwindling. The earnings of these men are about 25s. a week on the average, rising to 35s. in times when work is exceptionally plentiful.

File Forgers by Machine.—This comparatively youthful society, which was established in 1897, has still but a small membership of about 50 out of 300 or more workers. It is not a trade which calls for the same dexterity and endurance as did the hand forging, and it is not highly paid.

File Grinders.—The file-grinders have always had their own separate organization, which at times has been exceptionally powerful. The present society seems to have had a practically continuous existence since about 1845. In 1860 there were 204 members in the union, and in 1890, 240 out of 320 adult workers. In 1910 the membership was still high, 195 out of a total of about 250. The secret of this

society's success probably lies in the fact that since machine grinding was introduced it has been recognized by the union whose influence is thus coterminous with the trade instead of being confined to the traditional method. The average earnings are fairly good, 30s. to 35s. on the average, though the work is heavy, dirty, and exacting. Most of the men are in-workers, but there are some little master out-workers in the trade.

Hand File Cutters.—This is still by far the largest group of workers in the trade, and their society is apparently the direct lineal descendant of the "Filesmiths' Benefit Club" of 1784. It would seem, however, that when the society was rehabilitated in 1830–1 the file-cutters were organized as a distinct branch, though whether the parent society was federal or unitary is not clear. At all events we have on record the abstract of the deed "constituting and erecting the File Cutters' Branch Association, with the bond or obligation incorporated" which was executed on April 25, 1831. The object of this organization, as quaintly set forth in this document, was that of "legally maintaining and supporting the price or value of the labour of the said parties, members thereto, who are Journeymen File Cutters, residing in Sheffield and its vicinity, to be beneficial to secure to them and their families an adequate remuneration for their industrious and laborious efforts, and thereby greatly to meliorate their condition in most respects." The control of the society was to be entrusted to a committee of six persons, one half of whom were to be changed every six weeks, an arrangement which might guarantee the democratic character of its government, but one which, it would

seem, would lead to serious instability of policy. Weekly contributions of 6d. and 2d. were to be exacted from every adult member and boy respectively, and defaulting members were to be "sued and prosecuted" for the recovery of arrears. Strike pay was promised at the rate of 7s. per week per man, with 2s. 6d. for an apprentice, 2s. for a wife, and 1s. 6d. for a child.

Down to 1879 the fortunes of the file-cutters' branch were closely identified with those of the File-smiths' Union, in which it was absorbed. In 1879 the name was changed, and it became explicitly a society confined to file-cutters. Down to about 1890 the membership was very large, but has now dwindled down to about 110, including a few women. There were about 1,000 male adults in the trade in 1843, which number doubled in the next generation, this being a period of very rapid trade expansion. In spite of the competition of the machines, which has steadily increased during the last thirty-five years, the number of hand file-cutters still remains in the neighbourhood of 2,000. In 1889 branches of this union were established in Manchester, Wolverhampton, Birmingham, and Glasgow, there having been in the last-named place three previous unions; Manchester also had had a previous file-cutters' society, founded in 1860, which had amalgamated with the Sheffield union in 1871, but had collapsed in 1879. In 1889 the sections constituted an amalgamated society, with centralized funds but distinct rules; but the branches soon asserted their independence. The "Manchester and District Hand File Cutters' Association" still exists as a separate organization, with a membership of 112 in 1910.

The admission of women to the file trade was formerly stoutly opposed, and renewed attempts were made to prohibit it altogether. In 1847 the file-smiths' society wished to eject the 200 women and girls then at work, though three-quarters of them were the wives or daughters of members. The society decreed that any member who permitted his wife or daughter to work, or who assisted such women workers with their tools, should be fined £3. Only to widows and orphans was the right to work conceded. This stringent restriction proving impossible to enforce, it was afterwards superseded by marking off certain classes of work as women's work and confining the female workers to these branches.

The existing price-list for the Sheffield trade dates from 1873, when an advance was secured over the previous lists of 1854 and 1836. Some 1,400 of those engaged are out-workers, and there have always been a good many women file-cutters at work. The competition of the machines is necessarily severe, but the expansion of the trade has given scope for the development of the newer method without causing any very rapid shrinkage in the number of hand-workers. Earnings vary very greatly, but on the average a man in steady work can make from 25s. to 40s., and a clever young woman will often earn from 15s. to 20s., though the average will not be more than 13s. A system of co-operative production was pursued by the file-smiths' union for many years before its membership was disintegrated, but owing to a lack of capital and business skill was given up about 1879.

Machine File Cutters.—This new branch has a separate organization, established in 1897. It admits

women workers, but in 1910, out of a total of over 500 workers, had a membership of less than 100.

File Hardeners.—The “File Hardeners’ Society,” founded as an off-shoot of the File-smiths’ Union in 1862, is an organization with about 110 members, being 50 per cent. of the trade. Before they separated from the file-smiths the hardeners were usually superannuated file-cutters, no hardener being admitted to the union unless he had been brought up as a cutter. After the schism cutters were excluded, on account of friction between the branches incidental to their separation. As in other branches, the workers hold that the substitution of rolled Bessemer steel for shear steel has made their work more difficult. Up to 1866 the basis of payment was a time-wage-piece-work system, that is to say, a regular weekly wage subject to a given output being attained. After the strike of 1866 they established a regular price-list of piece-work rates, and were allowed to choose their own working hours. Their earnings are on an average 24s. to 27s. per week.

VIII. THE SAW TRADE.

Saw Smiths and Makers.—This trade society, as we have already seen, was fully organized as early as the year 1797. Later societies in the same branch are known to have been established in 1810 and in 1850, the present union having had a continuous existence since the latter date. Price-lists were issued in 1814, 1824, and 1844, the latter being nominally the basis of payments at the present time. A trade controversy which took place in 1830 over a reduction of the 1824 prices by about 40 per cent., in conse-

quence of bad trade, brings out the comparatively high scale of earnings which has usually characterized this trade. The masters were able to prove that the average earnings of their workmen for a complete year had been more than £2 per man per week, and that individual earnings had actually risen with the reduction of the rate. While such earnings were being made by saw-makers working only nine or ten hours a day, cutlers working fourteen to sixteen hours daily could not earn more than 12s. to 16s.¹ A similar dispute in 1844 again revealed average earnings for 28 workmen employed by various firms of 41s. a week, these being the best earnings, but averaged over a considerable period.² In 1844 there were 208 men engaged in the trade, practically all of them being members of the society, as well as 130 boys, the numbers having decreased by reason of trade depression. In 1860, when the union was at the height of its influence, the membership was 370, but this number had fallen to 150 in 1890, though it rose again to 290 in 1910, when it was practically at full strength. Nowadays the work is almost entirely executed by machine processes, and, owing to variations both in the quality of goods produced and also in the machinery employed, there is no uniform scale of prices, which in any case are not more than one-third of the prices for hand-made goods. Earnings are now from 30s. to 40s. per week for an average man.

Saw Grinders.—This society, which formerly held not only its own members but also those of other trade branches practically powerless beneath its

¹ *Sheffield Iris*, March 2 and 9, 1830.

² *Ib.*, June 13 and 20, 1844.

despotic sway, and earned an evil reputation by the lengths to which it carried the practice of intimidation and outrage, was founded in 1819, though probably there had been another society before this time, when the trades of saw-grinders and stove-grate-grinders were united in one branch. The only price-list known is dated 1859. The number of men employed has always been small, since the trade has never been confined to Sheffield. In 1830 the adult grinders employed numbered 80, and in 1843, 120. In 1860 there were 220 men employed, of whom 188 belonged to the society; but bad days came to the trade, and in 1890 there were only 55 grinders in union out of 120 men employed. In 1910 the workers numbered 150, of whom about half were members of the society. After the downfall of their notorious leader, William Broadhead, in 1867, the union found itself in serious difficulty and disrepute, and for about five years it was amalgamated with that of the jobbing grinders, but was re-established in 1872. At that time machine-grinding was rapidly replacing the hand process, having been introduced about ten years previously. Now all the work goes through the machines, and hand-grinding is only employed in the finishing processes. The union does not recognize grinders who only work machines, and these men earn somewhat less than a man who is competent for both hand and machine work. Earnings range from 35s. to 45s. per week. In the days of hand-grinding wages were much greater. "We have had workmen that have earned 20s. on a Saturday morning before breakfast," said a saw manufacturer in 1833,¹ and 15s. a day in busy

¹ House of Commons Select Committee on Commerce, Manufactures, and Shipping, 1833.

times was not an uncommon wage when the union exercised an effective control over the labour supply. Those were the palmy days of the saw-grinder, but they have been effectually terminated by the victory of the machine process.

Saw Handle Makers.—The “Saw Handle Trades’ Protection Society” dates from 1890, the previous union in this branch having broken up after the investigations of the Trades Outrages Commission. It has never been a strong or important society, and in former days derived its influence largely from the grinders. At the present time it contains about 60 members, or about half its previous strength, and has issued no price-list since 1847. Nowadays it is principally a mechanical trade with earnings averaging about 30s. a week. In 1860 the union membership was 136, and in 1890, 124.

IX. EDGE TOOL TRADES.

The edge-tool trades, while not peculiar to Sheffield, nor strictly embraced under the term of cutlery, have yet some historical affinity to the traditional staple trades and retain enough general similarity to the latter to make it necessary to include them in this survey. They do not, however, altogether share the characteristics of the older groups, since they represent in general a more advanced application of factory methods, and handwork is only relied on to a substantial extent in the grinding branches. The diversity of the prevailing labour organization is nevertheless closely analogous to that of the cutlery branches, as will be made clear by the following examples:

Edge Tool Forgers.—The “Edge Tool Forgers’

Misfortune Society" was originally established in 1828, the trade consisting in the hand-forging of axes, plane-irons, chisels, bayonets, etc. The heavy work is now done by steam hammer, but some of the lighter articles which are peculiar to Sheffield are still hand-forged. The trade was formerly divided into three branches—forgers, grinders, and hardeners—and there was at one time a strong union among the forgers and their strikers, who in 1843 numbered some 400 men. In 1890 there were about 100 members out of 340 men engaged in this branch. Price-lists were issued in 1836, 1846, 1853, 1864, and 1872, the latter being the final one. In 1890 the Sheffield Edge Tool Forgers were absorbed in the newly formed "Amalgamated Edge Tool Trade and Protection Society," a registered trade union which in 1910 had three branches and 280 members in all.

Awl Blade Makers.—There was formerly a small society in this branch, numbering about 30 men, which dissolved in 1886. It is now covered by the Amalgamated Edge Tool Trade Society. It is a trade which appears to have originated in Sheffield, but is now carried on in Birmingham and still more extensively in Walsall and Bloxwich.

Brace Bit Makers.—This handful of workers, as was the case with the last-named group, had formerly a small local society, which was also absorbed by the Edge Tool Society. Previously they had been included in the Joiners' Tool Society.

Joiners' Tools Makers.—This society had existed for many years previously to 1866, in which year they issued a revised price-list. In 1860 their membership was 100 and the same in 1890, though at the present time it is less.

Engineers' Tool Makers.—The “Amalgamated Engineers' Tool Makers' Society” was established in 1889. It is a small local society, and in 1910 had only 28 members out of about 500 workers, as compared with a membership of 128 in 1890.

Plane Makers.—The “Birmingham, Bristol, and Sheffield Plane-makers” have a small society with three branches and 68 members. It lays claim to a continuous existence since 1857.

Wool Shear Makers and Grinders.—The “Wool Shear Makers', Grinders', Finishers', and Benders' Society” is a registered trade union founded in 1890, when it had 160 members. In 1910 there were 124 men in the union. Down to 1889 the shear-grinders belonged to the Edge Tool Grinders' Society. A few years later the trade practice began to change on account of the increasing use of machinery for flying out a blade of solid steel, instead of the old method of welding a steel edge on to an iron blade.

Sheep Shear Makers and Grinders.—A second society, known as the “Sheep Shear Makers, Grinders, Finishers and Benders” was established in 1904, with a membership of about 75 men. The existence of this organization furnishes another good illustration of the extremely fissiparous tendencies of Sheffield trade-unionism. In this trade there is a co-operative enterprise, financed by trade union funds, which has attained a marked success both in domestic and in colonial markets.

Edge Tool Grinders.—The “Edge Tool Grinders' Society” is one of the older members of the Sheffield fraternity, and certainly goes back more than sixty years, though the date of its foundation is not

known. In 1860 there were 190 members in union, and about 60 wool-shear-grinders were also included in their ranks at that time; but the latter ran out of benefit during a prolonged and bitter resistance to a reduction of prices in 1889, and subsequently established a society of their own. The last price-list of the edge-tool-grinders was issued in 1872, but this was a reprint with additions of a much earlier list. It is a bulky volume known in the trade as the "Testament." Down to 1870 the workers in this branch were out-workers, liable to the deductions and charges usual under such circumstances; but now they are in-workers and are paid at net rates, having room and appliances found for them by the employer. This is reckoned a substantial gain. In 1890 the society had 150 members and in 1910 about 120 out of a total of 260 workers.

Jobbing Grinders.—This is a distinct trade, and though its work is miscellaneous it had at one time a formal price-list similar to those of other branches, and including such implements as reaping-knives, chaffcutters, and the like. The society was founded in 1859, and after the Commission of 1867 gave shelter to the saw-grinders, whose union had been abandoned in consequence of its notorious excesses. After an existence of exactly half a century the "Jobbing Grinders' Provident Association" was itself disbanded in 1909, its membership having slowly dwindled away from a strength of 76 which it could claim in 1890.

CHAPTER XIII

COMMERCIAL DEVELOPMENT

IN an earlier chapter¹ we have already traced the early rise of the widespread commercial reputation of Sheffield cutlery wares. We may now turn from the consideration of productive organization and briefly review the story of the subsequent commercial activities of the trade.

I. THE BEGINNINGS OF COMMERCIAL ENTERPRISE.

Throughout the seventeenth century the cutlery trade of Sheffield was, we are told, "inconsiderable, confined, and precarious," on account of the smallness of the markets on which the workers depended. For the most part the craftsmen had to rely on the visits of the travelling chapman, who appeared with his pack-horses from time to time, bartered for or bought such goods as he required, and then went his way. Most of the masters could not afford to work for stock, but some of the more prosperous cutlers accumulated a supply of finished goods—rarely more than could be stored in the workshop settle—and carried them to the numerous country fairs for disposal. But in addition to these outlets a wholesale trade was

¹ Ch. IV.

beginning to develop through the agency of a class of regular traders or "factors," who acted as intermediaries between the craftsmen, and the merchants in London and elsewhere. These factors represented the new merchant-capitalist function, sometimes holding small stocks of goods for disposal, and sometimes furnishing the workers with wheels, smithies, forge tools and the like ; so that in 1662 there were serious complaints of the reduction of the free master cutlers to a condition of dependence. It was, in fact, already beginning to be customary for the workmen to obtain their materials from the factors, though they retained the ownership of their tools and the traditional freedom to work as they liked.

At the beginning of the eighteenth century there were regular wholesale cutlers in London, some of whom had migrated there from Sheffield. These men provided one of the principal outlets for Sheffield wares, since they were accustomed to supply foreign markets as well as British consumers. They thus obtained a hold on the Sheffield industry so strong that it almost amounted to monopoly ; indeed, they claimed the exclusive right of handling Sheffield goods. For example, we find them in 1712 complaining bitterly to the Hallamshire Company that some of the cutlers in that district were in the habit of supplying "foreign" merchants with goods—general merchants, that is, who were not approved cutlers, as they themselves were. The reply of the Sheffield factors to this indictment was to accuse the metropolitan merchants of forcing prices down to an unprofitable level. But to this the Londoners retorted by threatening to set up their own agents or factors in Sheffield, and by emphasizing the importance to the

Sheffield cutlers of keeping prices low enough to meet the competition of the Birmingham makers.¹

Late in the same century it was the merchants of Hull who became most prominently concerned in the commerce in cutlery. These men not only financed the foreign exportation of finished goods, but were also interested as the chief importers of raw materials—particularly of iron and steel. They regularly gave long credits to the Sheffield manufacturers, and thus shared the capitalistic responsibilities of the trade. So extensive and intimate was this connection with Hull, that it lasted well into the nineteenth century, although long before 1800 many of the Sheffield factors had become substantial merchants, able and willing to assume a large measure of capitalistic responsibility for the manufacturers round them.² One of these men, who may be cited as an example, owned in 1765 no less than six workshops.³ Through these factors the trade relations of Sheffield were rapidly extended. Whereas in 1720 a journey to London was regarded as a foolhardy enterprise, a generation later some enterprising masters began to make regular periodic visits to the markets of London or of Lancashire, carrying samples and goods for sale. By the middle of the century a few of the leading manufacturing merchants were even beginning to establish agencies not only in London but also in foreign countries.⁴ The trade with the outside world

¹ Leader, "History of the Cutlers' Company," i. 155.

² The directory of 1787 gives the names of thirty such factors, many of whom were, however, ruined at the time of the Napoleonic Wars.

³ Joseph Hancock.

⁴ Joseph Broadbent, for instance, established a direct foreign trade as early as 1747. Leader, "Sheffield Burgery," 380.

which was thus established proved exceedingly profitable, especially that with America, whose markets were particularly remunerative, though fluctuating and speculative.

We may conclude this survey by quoting some doggerel from a song which was popular in Sheffield about 1780.¹ These verses clearly reflect the commercial importance which had by that time been acquired by the locality which has since remained the metropolis of the trade :

“The great poet Chaucer has praised Sheffield whittles :
For without knives and forks how could folk eat their
victuals?

As for our penknives, extensive our trade is :
Likewise our scissors, they're praised by the ladies ;
Our razors long time abroad famous have been :
Like our women and wit, they're bright and they're keen.
The bounty of nature on Sheffield town smiles ;
Yet could other trades work, if we did not make files?

“Why don't we supply them? Through all Europe we're
known ;
To the Indies our goods go, through Afric' they're shown ;
Likewise throughout the American coast
The cutlers of Sheffield their commerce can boast.
Go where you will, or with what else goods, we'll meet
'em ;
They're like our soldiers and sailors, none ever can beat 'em.”

II. FALSE WARES.

We have referred elsewhere² to the strenuous endeavours made by the Cutlers' Company throughout its early history to insist on the employment of sound

¹ Written by Alexander Stephens ; from John Wilson's “Collection of Sheffield Songs,” 1862.

² Above, Ch. V.

materials for the manufacture of cutlery wares, and we have seen how in the latter part of the eighteenth century the production of fraudulent goods increased in spite of stringent prohibitions. In 1797 this abuse reached such alarming proportions that a meeting of manufacturers of all kinds of cutlery was called to protest against the manufacture of knives, razors, scissors, and forks out of cast iron in place of steel.¹ The practice was condemned as a "shameful imposition on the markets, especially the foreign ones," and as certain to react on the prosperity and reputation of the whole industry. The following address was then drawn up and presented to the Master Cutler :

"The manufacturers of Knives, Razors, Scissors and Forks assembled to take into consideration certain grievances which we suffer, as stated in our Resolutions (a copy of which is herewith presented), and knowing that you, Sir, with the rest of the Corporate officers, ought to be, and we trust are, the faithful guardians of the public welfare as a Corporation ; and not doubting that you are at all times ready to exercise the discretionary power with which you are entrusted for the good of the whole body corporate, without any views of private interest : we, therefore, do, with all proper respect, request you to take into your most serious consideration the nature of our complaint, as connected with the general interest of the trade at large ; and if, upon due reflection, you think with us that making the blades of Knives and Razors, as likewise Scissors, Forks, etc., of Cast or Pig Iron, instead of Steel, although brought forward as an improvement, is only an imposition and a forgery ; and that, instead of promoting the general interest of the town and trade of Sheffield, such practices will disgrace and injure the whole body of manufacturers—as well the honest tradesman who hath been endeavouring for many years to raise and establish his credit by making a good article, as the avaricious and short-sighted being who, for a little present advantage, would sacrifice not only his future interest, but the well-earned reputation of hundreds of his fellow townsmen and neighbours : if, as hath been observed, you think with us in these

¹ *Sheffield Iris*, November 17, 1797.

cases, we doubt not but that you will proceed in lawful manner, as directed by the Act of Parliament, to adopt such a by-law as will be effectual in suppressing the evil complained of at present, and the means of preventing the like in future."

In response to this grandiose appeal, the Master Cutler summoned a meeting of the Company to consider the situation, but they determined to have nothing to do with the affair ; whereupon the Manufacturers' Committee issued an emphatic address to the whole trade, protesting once more against the abuse, and stating their fears that, "as the external appearance of steel goods may be so nicely imitated by the metal ones, it is more than probable that in the foreign market they will be sold to the unwary customer as steel." They further emphasized the injury that was being done to the occupation of the regular tradesmen in the town. Perhaps it will be replied, they said, that cast iron will answer the purpose of steel. Then, "let an impartial person, who knows the nature of steel and iron, say whether it is likely that cast iron should answer the purpose in a table-knife blade, a fork, a pocket-knife blade, a razor, or a pair of scissors!"

The agitation accomplished the temporary repression of the practice, but by 1810 the old complaints again become audible. The advertisement of a cutler's stock-in-trade at this time includes "30 gross of cast table-blades,"¹ and the scissors manufacturers, to the number of 46, are reported to be up in arms against the extensive production of cast metal scissors. They even proposed to circulate a "white list" of makers who would undertake to have nothing to do with such frauds, the workmen on their side pledging

¹ *Sheffield Iris*, March 6, 1810.

themselves to boycott manufacturers of the deceptive wares.¹ Yet another decade passes, and the story is once more repeated. Cast metal cutlery, we are told, is often marked "warranted" and "shear," and foreign merchants have had to journey to Sheffield in person to discover whether there are any honest manufacturers left there.² The trouble seems to have been specially persistent in the case of forks. In 1842, according to Dr. Calvert Holland, run metal forks were being turned out at the rate of 1,000 gross weekly; one man and boy would cast 100 gross a week, which quantity would have employed 45 forgers.³ In the scissors trade again the number of men engaged in the work of forging had fallen from 450 to 180 in consequence of the multiplication of spurious wares. Cast metal table-knife blades were also being manufactured in large quantities. Dr. Holland instances particular specimens of cast metal cutlery which exemplify the difference in price as compared with genuine goods: scissors from ½d. to 2s. 6d. per pair, which in wrought steel would be worth from 9s. to 15s. per pair; a dozen table-knives and forks in black pressed handles from 1s. 1½d. the set; pocket blades at 1½d. the dozen; a six-inch panel saw for 6d.; and so on.

Another practice which at this time was injuriously affecting the demand for the finer cutlery was the imitation of the best finish on cheap goods. About 1831, says Dr. Holland, the commonest knives began to be polished, and the demand for them has continued to increase; articles thus got up having a finished

¹ *Sheffield Iris*, March 27, 1810.

² *Ib.*, July 18, 1820.

³ G. C. Holland, "Inquiry into the Conditions of Cutlery Manufacture."

appearance and being in fact an imitation of fine cutlery.¹ At this time the weekly output of knives from the Sheffield workshops contained 108,000 such blades.

In 1854 we catch yet another echo of the old cast metal controversy, when the steel fork trade found it necessary to warn purchasers against buying any such goods unless stamped with the word "steel," since no forks without that mark could be relied on as genuine products.²

During the last half-century, though the trouble over cast iron blades has recurred from time to time, the main difficulty has lain in the need for clear differentiation of different grades of steel. In the eighties, in particular, quantities of goods made of Bessemer steel were marked with names indicating a higher quality, such as "Cast Steel," "Warranted Shear," "Best German Steel," and the like, and thus passed off on an indiscriminating public as superior articles.³ In 1884 the German Consul in Sheffield reported: "It is an open secret that thousands of tons of Bessemer steel are sold annually as cast steel for the home as well as for the foreign markets." These abuses were highly prejudicial to the reputation of Sheffield products, but happily they have been mitigated by the operation of subsequent legislation.

III. TRANSPORTATION BY LAND AND WATER.

Previously to the eighteenth century transportation by land was effected almost entirely by means of

¹ "The Mortality, Sufferings and Diseases of Grinders," Part II: "The Pen Blade Grinders," 1842.

² *Sheffield Independent*, January 7, 1854.

³ Royal Commission on Depression of Trade, 2nd Report, Part I (Cd. 4715 of 1886), Qu. 1143, 1338, 2966.

pack-horses, strings of these animals, burdened with merchandise, passing by roughly paved tracks, over the high moors to the north and west of the town, or across the more level country to the east and south. Already in 1637 we hear of regular carriers from Sheffield to London,¹ and this traffic was greatly augmented by the end of the century. In 1710 the first stage-wagon service from Sheffield to London was inaugurated, and in 1760 a regular passenger coach took the road. In 1790 there was instituted a tri-weekly service of coaches to Newcastle, the primary purpose being the conveyance of fish from Newcastle and Hartlepool to Sheffield. The coaches performed the journey in two days, whereas the road wagons required five, and the former gave a means of rapid transport from Sheffield to Leeds, Halifax, Ripon, Darlington, Durham, and other northern centres. This "fish machine," as it was called, was, as intending clients were informed, hung on standards to prevent the goods from becoming chafed in transit. The rate charged for conveyance to Newcastle was 7s. per cwt. Passenger coaches were also running to Birmingham at this time, the fare being one guinea for inside passengers and 12s. for outside seats.² By 1797 there were nine regular weekly coaches out of Sheffield, two of them being mails.³

From the earliest beginnings of regular trade the chief seaport through which finished goods were exported and the foreign irons were conveyed to Sheffield was Hull, the trade route thence being by way of the Rivers Trent and Idle to Bawtry, a place

¹ Taylor's "Carriers' Cosmography."

² *Sheffield Advertiser*, March 11, April 15, 1790.

³ *Sheffield Local Register*.

which was known as the "Port of Bawtry" even in the thirteenth century,¹ being one of the chief trading centres for the produce of the Midlands. In Defoe's time Bawtry Wharf was famous throughout South Yorkshire as the principal port to which heavy goods were consigned for shipment outwards. Hither came the lead from the Derbyshire mines and smelters, wrought iron, cutlery, and tools of all sorts from the Sheffield forges, and also large quantities of grindstones, which were consigned to London as well as to Holland, America, and other distant countries. From Bawtry to Sheffield was a land journey of twenty miles. This route was more advantageous and certain than the slow and insecure navigation by way of the Ouse, Aire, and Don, and was therefore generally adopted in preference to the latter.

The first announcement of the proposal to canalize the River Don, so as to render it navigable, elicited keen opposition from the towns of Gainsborough and Bawtry, whose inhabitants bitterly resented a scheme that would divert traffic "from the time-honoured trade-route through those places."² By 1750, however, the Don was adequately deepened to within three miles of Sheffield, and water carriage into the heart of the town was provided by the construction of a canal some sixty years later. This canal still finds employment in the conveyance of Swedish iron on its way from Hull to Sheffield. When the canal was first opened finished goods were also consigned by this route, travelling down the Don and thence to Hull, whence they were conveyed by steam packet to Dunkerque and other continental ports. Some cutlery

¹ Hunter, "S. Yorkshire." See also above, p. 70.

² Leader, "Sheffield Burgery," lv.

found its way to Germany, where, however, the production of scissors already successfully rivalled Sheffield. There was virtually no trade with France.¹

The port of Newcastle was also an important metal distributing centre, in consequence of its local activities in steel and cutlery production. Newcastle was, moreover, a famous market for grindstones, those of local origin having a great reputation, and being in demand in Sheffield itself for special purposes. Fuller alludes to the proverbial saying that "a Scottish man and a Newcastle grindstone travail all the world over." Here, too, came foreign grindstones; "some are fetched from Spain, but of so soft a grit that they are not fit for many purposes."²

The railway era began in Sheffield in 1834 with the appearance of the prospectus of a railway line running thence to Rotherham. The town was not content, however, with the prospect of being served by a minor branch line, and in 1836, when the route of the North Midland Railway from Derby to Normanton was under discussion, a most strenuous agitation was raised in the hope of inducing the promoters to carry the main line through the town. Nevertheless, the engineering obstacles were too serious, and the Sheffield and Rotherham Railway, which was opened in 1838, had to be accepted as a makeshift. The resentment aroused by the sidetracking of the town, to the injury of its commercial interests, led to the pressing forward of the project of the Manchester, Sheffield and Lincolnshire line, which in its turn was constructed between 1844 and

¹ Report on Sheffield and Rotherham Railway, C. 377, 1835.

² Fuller, "Worthies," ii. 188.

1854. This railway brought Sheffield into direct connection with Manchester and Liverpool on one side and the port of Grimsby on the other, and in addition to these gave a connection with the Great Northern line at Retford. The direct connection with Chesterfield by the Midland line was also finally realized, this section being opened for traffic in 1870.

The Sheffield manufacturers were quick to seize on the opportunity offered by the advent of these new facilities: and the great steel firms in particular established themselves alongside the new lines at the earliest possible moment.

IV. COMMERCIAL FLUCTUATION AND FOREIGN COMPETITION.

The trade with America was, as we have seen, the source of the earliest fortunes in the cutlery trade, but the War of Independence and, later, Napoleon's attacks on British commerce, had the effect of causing extreme and sudden fluctuations from great prosperity to deep depression. The demand for Sheffield wares was exceedingly good, but the trade was intermittent, and was liable to almost complete cessation from time to time. Indeed, this dependence on a fluctuating American market continued until a generation ago to be one of the chief causes of the recurrent periods of acute depression through which the trade periodically passed. One of the most active periods of trade on record occurred during the years 1809-10, and caused considerable alarm in Sheffield on account of the "under-handed" state of the industry. Wages in almost all branches reached a record level, and there was an urgent outcry for the relaxation of the restric-

tions limiting admission to the trade. There was a brisk demand for products, not only at home, but also in Spain, Portugal, South America, and other quarters of the world, and a speculative fever rapidly developed, each merchant vying with his neighbours as to who could first place his goods in the booming markets. It was estimated at this time that one half of the cutlery output was destined for foreign consumption.¹

The rapid advance in manufacturers' prices throughout this generation may be illustrated by the prices obtained in the file trade, where the conditions, however, were exceptional.² The unprecedented activity of this period was, unfortunately, built on a speculative foundation, and collapsed as rapidly as it had grown, and by 1812 we find the Master Cutler presiding at a large town's meeting to protest against the destruction of the export trade through the Orders in Council, and complaining that the latter, as also the Berlin Decrees, favoured the growth of rival producers in the United States. The Americans, he feared, would soon be able to supply not only their domestic markets, but also the important demand of the Southern portion of that continent.³ In 1813 the distress in Sheffield was acute, and wages were again at a low ebb.

¹ *Sheffield Iris*, February 6, March 6, 1810.

²

| PRICES OF FILES PER DOZEN. | | | | | | 5 inch. | | 9 inch. | |
|----------------------------|-----|-----|-----|-----|-----|---------|----|---------|----|
| Year. | | | | | | s. | d. | s. | d. |
| 1791 | ... | ... | ... | ... | ... | 1 | 2 | 3 | 0 |
| 1800 | ... | ... | ... | ... | ... | 1 | 7 | 4 | 6 |
| 1810 | ... | ... | ... | ... | ... | 2 | 0 | 5 | 6 |
| 1814 | ... | ... | ... | ... | ... | 2 | 8 | 6 | 6 |
| 1836 | ... | ... | ... | ... | ... | 3 | 3 | 7 | 3 |

Ib., January 30, 1838.

³ *Ib.*, February 4, 1812.

There was, however, a sharp recovery in 1814-15. Then arose a feverish trade boom, the declaration of peace having thrown open the American markets once more. So great was the demand that it seemed impossible to satisfy it. All the labour available, whether qualified or not, was pressed into the trade, including numbers of women and children, and extraordinary exertions were made to profit by the rich opportunities offered. After the boom came the speedy and inevitable reaction in 1818, followed by two years of keen suffering. The climax was reached in 1820, when the distress was universal. The payments for out-relief in the Sheffield Union had risen from £9,500 in 1815 to nearly £24,000 in 1820. Trade was at a standstill, and 2,000 houses in the town were empty. The masters bewailed the complete cessation of orders, and blamed the merchants and speculative manufacturers, who had compelled the abolition of legal apprenticeship, and so caused an inrush of workmen whose inflated output had glutted every market in the world.

It was during the depression of 1816 that the idea of establishing a storehouse, or public warehouse for the convenience of the little masters, was revived, the proposal being mooted that the storehouse should advance half the cash value of any goods deposited with it by little masters, and the balance should be paid when trade improved and the articles were finally disposed of.¹ Naturally the influence of such a scheme would be towards intensifying the temporary glut of goods and further depressing prices.

There was a steady improvement in trade after 1820, until the speculative trade boom of 1825 super-

¹ T. A. Ward, "Diary," 232.

vened, the reaction from which caused almost continuous depression for six years. A Parliamentary Report in 1830 testifies to the prevailing poverty of the workers. Out of 16,000 persons only one-twelfth were able to earn 25s. a week ; one quarter received 20s., and two-thirds about 16s. a week.¹ There was again a gradual revival from 1832 to 1836, aided by profitable American trade, the zenith being reached in that "glorious year of prosperity," 1835. Nevertheless, employment continued to be highly irregular throughout the decade in nearly every branch, alternating between starvation wages and periods of frenzied activity—"the hunger and burst system," as it was called in 1836.²

From this time trade passed through a succession of commercial difficulties, going from bad to worse until, in 1842, the lowest pitch of depression was reached, accompanied by an intensity of misery and suffering which is fortunately without parallel in the century's history. The average payments to occasional poor, that is, out-relief granted to able-bodied men, rose from £13 15s. a week in 1837 until in June, 1842, it reached an expenditure of £380 a week.³ One thousand of these able-bodied workers were supported by the parish, and thousands more were existing in a condition of semi-starvation. According to the Census of 1841 there were 3,200 unoccupied houses in Sheffield ; during this period the trade funds came altogether to the end of their reserves, and crime increased in alarming fashion.

¹ Report on the Means of Lessening the Evils arising from the Fluctuation of Employment in Manufacturing Districts.

² *Sheffield Iris*, December 27, 1836.

³ Lord Radnor's speech in the House of Lords.

As James Montgomery wrote in 1842: "Since the year 1837 there has been manifest a most disastrous turn in trade and manufactures. The oldest inhabitant cannot remember a crisis of calamity so general, and apparently so hopeless, as that which has come upon us. The labouring classes have been going down into abject destitution." An application for help made to the Queen's Relief Fund showed that out of 25,000 men and 7,000 women then employed there were but 4,000 to 5,000 men in full work, these earning on the average 18s. a week; there were 17,000 men partially employed, who earned about 9s. a week. There were 1,000 women and children in full work at a wage of 5s., and 4,500 partially employed who received no more than 3s. a week. At this time hundreds of deaths were being accelerated by the sheer deficiency of the necessaries of life.¹

It is noteworthy that during this period, though profits had vanished and prices were as low as wages, the output was apparently increased rather than diminished. The value of Sheffield exports to all parts of the world, which in 1835 amounted to £2,097,000 had risen in 1840 to £3,178,000.²

The experience of these years has fortunately never been repeated: the tides of trade have ebbed and flowed since then, but never has the level sunk so low. The brightest subsequent periods of trade prosperity have been the years 1854-7, 1864-6, the great boom of 1872-3, the more solid and healthy activity of 1882-4, the quiet advance of 1890 and subsequent years leading up to the great activity of 1899, and finally in 1910-13 the return to conditions of employ-

¹ G. C. Holland, "Vital Statistics," 111.

² *Sheffield Iris*, February 25, 1843.

ment and remuneration such as almost recalled the glut of work in 1872.

A noteworthy change that has come about during the past generation is the close association which has been established between cutlery and silver-plate manufactures. These industries, which were formerly regarded as entirely distinct, are now commonly united under the same management. In 1907 electro-plate wares to the value of £189,000 were produced in cutlery factories and workshops.¹

The total value of the output of British cutlery in 1907 was £1,534,000, of which £770,000, or roughly one half, was exported; though it must be remembered that the former figure represents the net factory price, while the latter includes transportation and merchants' charges. The net imports for the same year were valued at £117,000, or about one-thirteenth of the factory value of the domestic product.² The output of the file trade for the same year amounted to £615,000; the value of saws and machine knives was £363,000, and edge tools reached a total of £567,000.³ Taking the tool and implement trades as a whole, the export value was about 43 per cent. of the factory value of the total domestic product, and the import value a little more than 6 per cent. of the same total.

It was in the forties that the domestic productions of America first became a serious menace to the exports from Sheffield to that market. In 1843 the native cutlery manufacture reached an output of \$1,325,000; and the American factories had acquired a virtual monopoly of their own home trade in axes, augers, saws, and other tools, including a substantial

¹ Census of Production, 1907. Cd. 5254, 1910, p. 19.

² *Ib.* p. 19.

³ *Ib.* p. 21.

share of the valuable trade in scythes and light edge-tools. The American scissors trade was already mainly in German hands, and German pocket-knives, cheaper than even Sheffield could produce, were selling in all parts of that continent.¹ In the next decade the table-knife trade began to pass to native American factories, since the latter could meet the English prices, and at the same time supplied cheap grades with superior finish.² In Europe, again, the French manufacture was making considerable strides, and the exhibits at the great Exposition of 1853 caused palpable uneasiness among critical visitors from Sheffield, owing to the high quality and astonishingly low price of the goods.³

The chief feature of the past half-century, as far as the British export trade is concerned, has been the search for fresh markets abroad in substitution for the steadily failing American demand.⁴ The McKinley Tariff gave the final blow to this trade, and caused most British manufacturers to abandon the American market for good, though German makers still cling to the trade in common articles. By the end of the century only the very best quality of Sheffield goods were able to hold their place, and the total trade was no greater than was formerly done by a single firm. Moreover, the system of combination duties, including both specific and ad valorem rates, has encouraged the cheapening of grades and undervaluation. In 1907 the importations of cutlery into the United States

¹ *Sheffield Iris*, January 30, 1845.

² *Ib.*, September 10, 1859.

³ *Journal of the Society of Arts*, iv. 357 (1856).

⁴ See Appendix XVI for table giving exports from Sheffield to the United States, 1868 to 1910.

of America were valued at \$2,232,000 and the average duty was 64·4 per cent. Pocket-knives were valued at \$1,008,000 and paid an average duty of 78·3 per cent., and the domestic production of these goods was three times as great as the imports. Razors to the value of \$554,000 were imported, paying duties amounting to 55·5 per cent., the domestic output in razors proper, excluding "safety" specialities, being somewhat under this total. The supply of scissors was principally confined to Germany, the American factories producing mainly cheap cast scissors and malleable iron shears. In the table cutlery branch the imports were only \$175,000, the average duty being 49·9 per cent.

The following figures sufficiently indicate the decline, both absolute and relative, in British exports to the United States during the past half-century : ¹

IMPORTS OF CUTLERY TO THE UNITED STATES.

| From | 1851 | 1884 | 1912 |
|---------------|-----------|-----------|-----------|
| | \$ | \$ | \$ |
| Great Britain | 1,417,000 | 1,060,000 | 356,000 |
| Belgium ... | 38,000 | 2,000 | — |
| Germany ... | 698 | 826,000 | 1,566,000 |
| France ... | — | 21,000 | 58,000 |

British imports of cutlery from the United States

¹ According to the American Consular Reports the exports of cutlery from Solingen to the United States for the year ending June 30, 1903, amounted to \$1,257,000, while the corresponding exports from Sheffield were only \$75,000. ("Commercial Relations of the United States," 1903).

are now as great as the exports thither, while Germany supplies a greater value than she receives.

Some compensation for this virtual closure of the American market has been found in the increasing business with South Africa, Canada, Australia, New Zealand and South America, and India, this inter-Imperial trade as a whole representing about 60 per cent. of the total exports on the average of five years' trade.

In Canada, for example, British imports hold a predominant position, embracing more than half the total trade. This position is, however, threatened by the competition of both Germany and the United States, in spite of the tariff preference conceded to the mother country. It is, however, said that German products sometimes make their way through the tariff barrier disguised as goods of British production. The scissors trade is virtually monopolized by these other countries, and Germany is making great inroads on the razor trade. It is in the cheaper grades that this German invasion has been most noticeably successful.¹

The table opposite gives the distribution of the British export trade in recent years.²

The total imports amount to 22 per cent. of the average value of the exports, the principal sources of foreign supply being Germany and the United States.

Great Britain's share in the cutlery trade of France at different periods may be illustrated by the figures given on the opposite page.

¹ Report to Board of Trade on the Trade of the Dominion of Canada, 1911, Cd. 5591, p. 66.

² See Appendix XVI for full comparative tables of foreign trade in cutlery.

UNITED KINGDOM.

CUTLERY—EXPORTS.

| | 1907. | 1908. | 1909. | 1910. | 1911. | 1912. |
|------------------------------------|---------|---------|---------|---------|---------|---------|
| | £ | £ | £ | £ | £ | £ |
| Total exports to foreign countries | 334,000 | 245,000 | 267,000 | 315,000 | 344,000 | 362,000 |
| To United States | 90,400 | 59,500 | 67,700 | 64,200 | 63,100 | 57,500 |
| Brazil ... | 49,200 | 28,700 | 32,300 | 44,700 | 59,700 | 67,700 |
| Argentine Republic ... | 23,000 | 21,600 | 27,200 | 23,500 | 16,800 | 18,700 |
| Chile... .. | 20,700 | 10,800 | 11,200 | 15,800 | 17,800 | 19,600 |
| Germany ... | 19,600 | 15,300 | 17,600 | 40,900 | 57,000 | 68,700 |
| France ... | 10,900 | 7,700 | 10,300 | 10,600 | 9,600 | 7,000 |
| Total exports to British dominions | 436,000 | 369,000 | 389,000 | 498,000 | 507,000 | 521,000 |
| To Australia ... | 135,000 | 114,000 | 116,000 | 142,000 | 165,600 | 167,100 |
| Canada ... | 107,500 | 69,500 | 86,600 | 113,300 | 103,100 | 119,900 |
| India... .. | 40,300 | 55,800 | 49,200 | 59,300 | 73,100 | 77,700 |
| South Africa | 41,300 | 39,400 | 52,400 | 60,600 | 66,600 | 69,200 |
| New Zealand | 37,100 | 38,300 | 32,200 | 41,400 | 39,100 | 45,100 |
| Grand total exports | 770,000 | 614,000 | 656,000 | 813,000 | 851,000 | 883,000 |

UNITED KINGDOM.

CUTLERY—IMPORTS.

| | 1907. | 1908. | 1909. | 1910. | 1911. | 1912. |
|-------------------|---------|---------|---------|---------|---------|---------|
| | £ | £ | £ | £ | £ | £ |
| From Germany ... | 78,800 | 69,100 | 71,700 | 106,800 | 107,300 | 121,000 |
| United States | 67,100 | 81,000 | 76,500 | 55,200 | 51,000 | 36,000 |
| Total imports ... | 154,000 | 158,000 | 156,000 | 172,000 | 170,000 | 169,000 |

FRANCE.

CUTLERY—IMPORTS.

Percentage of total imports.

| | 1835. | 1875. | 1911. |
|-------------------|-------|-------|-------|
| | % | % | % |
| From Germany..... | 31·5 | 30·7 | 77·7 |
| Great Britain... | 12·0 | 58·1 | 10·0 |
| United States... | — | — | 5·2 |
| Belgium | 33·0 | 9·0 | — |

French exports of cutlery have always found their best market in the Latin countries — formerly in Spain and Portugal, Italy and Sardinia ; to-day in Belgium, Latin America, and the French colonial possessions.

As Germany is the most formidable competitor of Great Britain with regard to cutlery exports to the world's markets (her exports averaged £1,274,000¹ for the years 1909-11, as compared with £773,000 for the United Kingdom) so she is also a serious rival in the home market, as the above figures show. The explanation of this state of things is to be found in the technical proficiency of her manufacturing methods. In many important lines of production Germany has led the way in the substitution of machine methods for hand production, and her manufacturers have in this way established a lead over their more conservative British competitors in the case of certain cheap goods which can be produced in quantity. These facts need, however, some further elucidation, in order to obviate deductions which would be unfair to the British manufacturer.

The reason why machinery was more readily adapted to cutlery production in Germany than in England was principally because the trade of the former was concerned with common qualities, while the latter aimed at producing the best article possible. The machine-made goods were notably inferior, and the British manufacturer would have sacrificed his reputation for high quality had he attempted to substitute the former for these. In Germany, however, the machine-made goods took the place of inferior

¹ The German classification includes swords and certain miscellaneous articles.

articles for the most part, such as those made of cast metal, and thus the substitution represented an improvement in quality vastly more important than the economy of cost. As a leading case we may instance the scissors trade, the greater portion of which is now in German hands. Germany got a foothold in the English market in 1874, when a prolonged strike closed down this branch of manufacture in Sheffield. Germany had adopted mechanical stamping instead of casting, while Sheffield clung to hand forging. The stamping method has steadily advanced and improved, and to-day none but the very finest scissors are forged by hand. England, of course, did not stand still. Not only have vast quantities of German stampings been imported into Sheffield, but in this, as in other branches, the new technique has been thoroughly mastered and the best mechanical practice adopted. Doubtless the future lies with the machine, at all events for common or standard qualities; but here, at least, the industrial revolution is not yet complete. That the situation is thoroughly appreciated in Sheffield is shown by the considered judgment of a prominent Master Cutler, given in 1907: "The cutlery trade is kept down by German competition, which is, in some respects, on more scientific and better organized lines. The wages in the cutlery trade in Sheffield will not rise, in my opinion, until we have brought more machinery into the trade."¹

The foreign trade in tools (other than agricultural) is depicted in the table on the next page. The Board of Trade returns do not distinguish

¹ Mr. Albert J. Hobson, Royal Commission on the Poor Laws, Evidence, vol. viii. Qu. 88440.

the various branches, such as files, saws, and edge-tools.

TOOLS—EXPORTS.

| | 1907. | 1908. | 1909. | 1910. | 1911. |
|------------------------------------|-----------|-----------|-----------|-----------|------------------------|
| | £ | £ | £ | £ | £ |
| Total exports to foreign countries | 1,092,000 | 956,000 | 877,000 | 995,000 | 1,055,000 |
| Total exports to British dominions | 665,000 | 641,000 | 614,000 | 739,000 | 784,000 |
| Grand total ... | 1,757,000 | 1,597,000 | 1,491,000 | 1,734,000 | 1,839,000 ¹ |

Our principal foreign customers, in order of importance, were Russia, the Argentine Republic, Chile, Germany, France. The Imperial trade was directed principally to Australia, India, and South Africa.

In the case of imported tools (including agricultural implements) the country of origin is usually the United States, as the following figures show :

TOOLS—IMPORTS.

| | 1907. | 1908. | 1909. | 1910. | 1911. |
|----------------------------|---------|---------|---------|---------|----------------------|
| | £ | £ | £ | £ | £ |
| From the United States ... | 264,000 | 175,000 | 199,000 | 229,000 | 257,000 |
| Total imports ... | 400,000 | 301,000 | 332,000 | 389,000 | 446,000 ² |

¹ In 1912 the exports were as follows: to foreign countries, £1,131,000—to British dominions, £902,000—total exports, £2,034,000.

² Imports during 1912: from the United States, £280,000—total imports, £505,000.

CHAPTER XIV

THE INDUSTRY ABROAD

IN order to gain a full appreciation of the status of the English cutlery industry, both now and in former times, it is well to make a rapid review—for the purpose of comparison—of cutlery manufacture in other countries. A survey of this kind may tend to dispel certain insular prejudices, and should help to bring about a realization that there is to-day, as in all ages, much for our industrial leaders to learn from the achievements of other peoples. There has never, probably, been a time when the British cutlery industry could lay claim to an all-round supremacy of the art of cutlery manufacture, and hence, in this instance, an international comparison is peculiarly instructive.

Perhaps there is no industry more universal than that of knife-making; it is found in every portion of the globe, in all ages, and among all the races of mankind. Even in this modern age of extensive transportation and complex commercial intercourse, every country of any industrial prominence can still boast of a cutlery manufacture on a more or less extensive scale. It is not necessary, however, to review these widespread activities in detail. It is enough for our purpose to select for notice only

those countries in which the industry has a special commercial, industrial, or historical significance.

The cutlery which in past ages has attained the greatest renown has been that of Toledo and Damascus, to which we may add the ancient sword cutlery of Japan. Without giving credence to the fabulous exploits and virtues attributed to these weapons, there is ample evidence that, though produced under a very simple industrial technique, they represented the acme of workmanship and of temper. The credit for the weapon manufacture of Toledo belongs to the Moors, who developed the craft in the ninth century ; and the refined technique which they elaborated established a tradition which lasted down to the eighteenth century. The most serious rival of Toledo during the Middle Ages was Damascus, whose sword and dagger cutlery, from the tenth to the fourteenth centuries, gained world-wide renown both for temper and for artistry. These examples, however, need not detain us, since their importance, like that of the famous products of Japan, is to-day archæological rather than industrial. The same limitation applies to the famous industries of Nuremberg (thirteenth to eighteenth centuries), Augsburg (fourteenth to seventeenth centuries), Munich (fifteenth to eighteenth centuries), and to many of the ancient seats from which cutlery-making has vanished, or where it is now obsolescent. In the above-mentioned cities the industry was in full activity in the sixteenth century, under elaborate guild regulations, including the usual insistence on the *Wanderjahre* and the *Meisterstück* as conditions of full membership. In Strasburg, to take one more illustration, the production of a masterpiece was not

exacted from the aspirants to admission to the freedom of the cutlers' craft earlier than 1750; but the two years' travel at the close of apprenticeship dates back to the early days of the gild organization.

In Austria the ancient seat of the national cutlery industry, Steyr, is still the centre of productive activity. Here the cutlers' craft appears to have been organized in 1408, and it experienced a great extension in the sixteenth century, at which time its wares attained considerable celebrity. Each successive monarch renewed the privileges of the gild, which privileges, according to the statutes of 1563, included the right to stamp their products with the arms of Austria. Though the industry has survived down to the present day, it has suffered a material decline, which has become more marked since the middle of the last century. Le Play, describing the organization in 1851, speaks of it as being still virtually in the handicraft stage; the cutlers still purchased their material on credit and marketed the finished goods. The merchants, who exploited the trade, kept the cost of material high, and beat down the price of the completed wares, thus depressing the industry and encouraging bad workmanship and inferior products. During the last fifty years, the competition of cheap factory-made articles from elsewhere has caused the industry to recede still further. There are still, however, about a thousand workers at Steyr, and others in neighbouring centres.

In Russia cutlery manufacture has its home in the governments of Nijni-Novgorod and Vladimir, where, at the end of the last century, there were some 1,500 factory workers; about 5,500 rural handicraftsmen were also engaged in the manufacture.

Poland also possesses some factory industry, while in Finland there is still a peasant handicraft, producing goods of excellent quality and workmanship.

In Sweden the gild system survived in full force down to 1846. Though there is still much domestic employment in the trade, the factory system and division of labour are now well established. The cutlery industry was late in developing in this country; but it has made rapid strides during the past century, being powerfully aided by the pre-eminence of the native carbon iron.

FRANCE.

France is one of the oldest cutlery-making nations; and the excellence of her products to-day makes her, in this respect, one of the foremost nations of the world. Perhaps the most remarkable feature of the manufacture is its diversity. Its diffused localization, the great variety of its products,—adapted as they are to the requirements of many widely different markets,—the artistic excellence and individuality of the goods produced, the lack of uniformity in industrial technique—all these combine to give the industry a peculiar interest and fascination.

Historically, the principal cutlery centres in France have been Paris, Thiers, Nogent, Langres, and Châtellerault; but in addition to these the evidence of an established industry, in former times, is to be found at St. Étienne, Moulin, Cosne, Nevers, Caen, Lyon, and a very large number of other cities. In Toulouse, for example, there may still be found the *Rue des Couteliers*, now the sole remaining witness to a craft that endured from the thirteenth to the

eighteenth century. It is interesting to find, from the statutes of 1465, that in Toulouse the trade was already divided into distinct branches; the cutlers might only handle knives, the razor-makers were restricted to razors, and the-edge-tool-makers might not trespass beyond their own occupation.¹ At Rouen, again, the cutler's craft attained considerable prominence.² In this city, the guild of the *Couteliers, Graveurs, Doreurs sur fer et acier* first appears in the fourteenth century; and its statutes were reaffirmed by successive monarchs until, in 1734, they underwent a radical revision. We may quote from the latter code the work prescribed for the *chef-d'œuvre*, or the qualifying test for admission to the dignity of a master. Each candidate was required to manufacture unaided, and to the satisfaction of his judges, the following articles: one pair of paper-scissors, one pair of tailors' shears, one pair of curved scissors, one knife with two springs, enriched with gold or silver, one larding-knife with double ferrule, one surgeon's trepan with three teeth. The severity of this task was relaxed in the case of a cutler's son. Surely it would not be easy to find, in the ranks of modern factory operatives, any single man whose training had exacted an all-round competence comparable with that of the humblest of such aspirants to the honour of guild mastership. After 1779 these cutlers became merged in other crafts, and gradually lost their identity and their importance.

The progress of the French manufacture at different periods is indicated in the following table, in which

¹ Pagé, "La Coutellerie," i. 67.

² Ouin-Lacroix, "Histoire des anciennes corporations d'arts et métiers," 1850.

the figures apply to the total employment furnished in the several districts, and not merely to the cities themselves.¹

| | SIXTEENTH CENTURY. | SEVENTEENTH CENTURY. | | EIGHTEENTH CENTURY. | |
|--------------------|--------------------|----------------------|-------|---------------------|-------|
| | Masters. | Masters. | Men. | Masters. | Men. |
| Paris | 60 | 91 | 273 | 120 | 360 |
| Thiers | 170 | 430 | 1,293 | 500 | 5,000 |
| Langres and Nogent | 20 | 30 | 90 | 61 | 244 |
| Châtellerault ... | 50 | 120 | 360 | 300 | 700 |
| Total, France ... | 340 | 758 | 2,268 | 1,108 | 6,934 |

| | 1839. | 1878. | 1898. |
|---------------------|----------|----------|----------|
| | Workers. | Workers. | Workers. |
| Paris | 500 | 750 | 800 |
| Thiers | 12,000 | 16,000 | 18,000 |
| Langres and Nogent | 3,000 | 5,000 | 4,000 |
| Châtellerault ... | 600 | 500 | 500 |
| Total, France... .. | 16,100 | 22,250 | 23,300 |

It will be seen that while the principal seat of the industry has always been established at Thiers, yet the industry is even now by no means completely localized there.

The cutlery trade of Paris can lay claim to great antiquity, and it has maintained its high prestige down to modern times. The cutlers of Paris were already incorporated when Étienne Boileau collected and recorded the ordinances of the Paris mysteries (c. 1261).² The bladesmiths and the hafters, even at

¹ Pagé, *loc. cit.*, vol. iv. ch. xv.
² See Fagniez, "Étude sur l'industrie et la classe industrielle à Paris, au xiii et au xiv siècle," 1877.

this time, were organized into separate communities, the *Fèvres couteliers* and the *Couteliers faiseurs de manches*. The statutes of the latter craft forbade them to decorate horn handles with silver, lest they should be passed off as ivory; similarly, nightwork was forbidden, lest it should lead to bad workmanship.¹ In neither branch were more than two apprentices allowed to each master, the period of servitude being six years. Fresh statutes for the regulation of the craft were set up in 1368, 1565, and 1608. By 1368 the two fraternities were united in a single gild, though a strict demarcation was still maintained between the work of the cutlers and that of the hafters. The craft was supervised by a jury of searchers, consisting of two bladesmiths, two hafters, and a goldsmith. Work was permitted only between dawn and curfew. The most famous code of statutes of the Parisian cutlers is that of 1565, by which the administration of the trade was elaborately regulated. No master might now take more than one apprentice at a time, and no one could become a master till he had passed through the period of servitude and produced a *chef-d'œuvre*.²

In the middle of the eighteenth century there were five hundred master cutlers in Paris, the fame of whose wares threw rival manufacturing centres into the shade. They included "master smiths, cutlers, engravers, and gilders on iron and steel, tempered and untempered." The masters were jealous of their monopoly, and prohibited the journeymen from grinding in the public markets and the retailers

¹ Lespinasse, "Les métiers et corporations de Paris," vol. ii. 378 *seq.* Levasseur, "Histoire des classes ouvrières," vol. i.

² Savary, "Dictionnaire de commerce," 1741.

from hiring workmen, even for repair work.¹ The fine cutlery of Paris was still without a rival. The best blades were made of composite metal, a "mood" of fine steel being placed between blanks of common steel, with iron rods outside these again, the whole being brought to a welding heat and forged down to the desired form. Damascus blades were made by placing five steel blades alternately between six iron ones and forging the whole into a square rod; this rod was then twisted from end to end, again squared, and doubled on itself; lastly, a rod of fine German steel was placed between the two halves and the whole welded and forged into a blade. This method of forging was afterwards applied to hollow-ground razors, in such a manner that the back of the blade was of common steel and the edge of English cast steel. Knives were commonly shaped with a file after forging, and were finished with a wooden glazer.

The usual method of grinding was for the grinder to lie prone, in front of the stone, on a raised plank covered with a mat, an operation which, according to Perret, requires "*un bon estomac, et une poitrine forte.*"² The stone was operated by a band passing from a large flywheel, six or seven feet in diameter, which was driven by hand, or else by means of a dog-wheel, or sometimes by a horse-mill. Since about 1830 steam- and water-driven hammers and grindstones have been employed, just as in the forging department steam stamping and flying out have been steadily superseding hand-forging.

Though retaining, throughout the past century, a world-wide renown for the artistic perfection of its

¹ J. Barbaret, "Monographies professionnelles," 1889, v. 185 *seq.*

² "L'Art du coutellier," 1771.

products, Paris has long been superseded by Thiers as the principal seat of the French cutlery industry; the former city, as was the case with London, becoming increasingly important as a commercial centre. The industry at Thiers, which dates from the fourteenth century, was formally organized in 1582; provision was made for the regulation of marks, and for the searching of false wares, in order that the master cutlers of Thiers should "*faire les cousteaulx de bonne et loyalle estoffe, et de la meilleure que leur sera possible de recouvrer.*"¹ The apprenticeship rules were identical with those of Paris. Fresh statutes were established in 1614 and 1743, the latter code containing provision for the regulation of mechanical hammers and for the suppression of the abuse of substituting iron for steel. The first mechanical factory was established about 1840; but during the first half of last century the industry was still largely organized under a simple domestic system, the master cutlers being concerned solely with the work of mounting and finishing the knives; the previous operations were all carried on in the homes of the workers. By 1862, however, the greatest possible use was made of mechanical processes, there being no such extensive utilization to be found in any other cutlery centre at that date. Blades, springs, and scales were filed out; boring and stamping machines, circular saws, lathes, and presses were applied wherever practicable. Moreover, a far-reaching division of labour had been introduced. A clasp-knife, for example, commonly passed through the hands of from fifteen to twenty workers,

¹ Pagé, *loc. cit.*, i. 69. Cf. Report of Jury, Paris International Exposition of 1872.

the various classes of forgers, hardeners, temperers, grinders, polishers, and hafters being quite distinct.¹ The greater part of the operatives were still home workers, dividing their time between industrial and agricultural pursuits. A large export trade had been established, though the products were mainly of common or medium quality.

These features are still characteristic of the industry of Thiers. Cutlers' shops abound in the neighbouring villages, and numerous grinding-wheels are located on the waters of the River Durolle, a mountain torrent, admirably adapted for the provision of power on a small scale. The use of the file has been superseded, to a large extent, by the employment of emery-wheels. The grinders rent their own work-places and regulate their own hours. Unlike their fellow-craftsmen in other centres, they retain the recumbent attitude for work, lying prone on a plank fixed above their stones, which turn towards the worker. It is common for a dog to be trained to lie on the grinder's thighs, giving him additional leverage, and at the same time protecting him from chills.

Next in importance to Thiers comes Nogent, which centre took over the decaying but more ancient industry of Langres. The cutlers of Langres had been organized in 1454, their statutes being revised, a century later, in 1577. They had enjoyed the advantage of abundant local supplies of iron and grindstones; they had also been free from many of the restrictive ordinances enforced by other cutlery corporations. There was at this time no separation between the various branches of cutlery manufacture.

¹ Pagé, *loc. cit.*, ii. 271.

UNIV. OF
MICHIGAN

FRANCE—CUTLERY WORKS ON THE RIVER DUROLLE, THIERS.

FRANCE—KNIFE GRINDERS, THIERS.

TO THE
MEMBERS OF THE
LEGISLATIVE COUNCIL

During the eighteenth century, however, this lack of proper supervision caused the reputation of Langres to decline, and made possible the successful competition of Nogent, where much fine cutlery is now produced and a large number of factories are successfully operated. Some of these still make use of water power. The workers are divided into two classes: home workers, using hand power only, and factory workers, amply supplied with mechanical aids. The former still form a notable body of operatives, being remarkable for their manual skill and for the tastefulness and artistic excellence of their products. The speciality of Nogent is fine cutlery. Indeed, Nogent has nothing to fear from competitors in this class of work.

At Châtellerault, though the cutlery industry exists on a comparatively small scale, it nevertheless offers many points of interest. We may, for example, notice the specific reasons for the prohibition of nightwork, usual in bygone ages, as stated in the craft ordinances of 1561. According to this code, the restriction is imposed "*parce que le dit mestier est difficile à faire, et qu'en icelluy faisant on mène grand bruit audit mestier, qui pouroit prejudicier et nuire aux voisins.*"¹ At the beginning of the eighteenth century we find that the cutlers were regarded as the most important craft in Châtellerault. While the master cutlers controlled the corporation, the artisans were united in their *confrérie*, which was linked up with similar societies in other places, and so facilitated migration in search of work. Arthur Young gives us a vivid impression of the activity of the Châtellerault industry at the time of his visit in 1787. He says: "There

¹ Pagé, *loc. cit.*, i, 104.

is a considerable cutlery manufacture : we were no sooner arrived than our apartment was full of the wives and daughters of manufacturers, each with her box of knives, scissors, toys, etc., and with so much civil solicitude to have something bought that, had we wanted nothing, it would have been impossible to have let so much urgency prove vain. It is remarkable, as the fabrics made here are cheap, that there is scarcely any division of labour in this manufacture : it is in the hands of distinct and unconnected workmen, who go through every branch on their own account, and without any assistance, except from their families.”¹

During the first half of the last century the progress of the industry was somewhat chequered, as a consequence of the concurrent prosecution of the manufacture of weapons in the district. When the latter industry was active, it lured the cutlery workers away ; when it was stagnant the cutlery shops were flooded with assistants, and over-production resulted. On the other hand, the factory methods and division of labour practised in the weapon industry were adopted by the cutlery masters ; and the development of the industry was so rapid that the old hand-wheels had to be supplemented by horse-mills and water power. During the last fifty years the cutlery manufacture has been transferred from Châtellerault itself to the surrounding villages, where it has acquired a new lease of life. Machine methods were fully utilized by 1880, supplemented by an elaborate subdivision of manufacturing processes. At the present time each individual table-knife, for example, passes through the hands of some fifty workers ; there are

¹ A. Young, “ Travels in France,” September 3, 1787.

from twenty to thirty processes in the preparation of the blade alone. The blades are forged under rapid-running hammers and trimmed in a sort of mechanical filing machine ; then comes a preliminary grinding, or "whitening" ; then the marking ; the blade is then trued by means of a hammer ; next comes the tempering, after which the blade is again straightened ; this is followed by the final grinding and polishing. Each of these stages is subdivided. By way of illustrating the contrast of technique with that prevailing in Thiers, it may be noted that in this locality the table-blade-grinder stands to his work, while the razor-grinder sits. It follows from what has been said that this industry is almost exclusively carried on in large factories.

GERMANY.

The importance of the German cutlery industry at the present time makes it necessary to consider the story of its development in some detail. This industry, which is now almost entirely in the town and neighbourhood of Solingen, presents many points of similarity to the like trades of Sheffield, but offers also some instructive contrasts. In the first place, though the numbers occupied in cutlery manufacture in the two centres are similar, Solingen is a comparatively small city ; indeed, the whole population of the Solingen district, including the adjacent towns of Gräfrath, Höhscheid, Wald, and Ohligs, does not number one-third of the inhabitants of Sheffield. Again, throughout this whole area the manufacture of cutlery is the one staple industry. The manufacture of tools, saws, and files, which are also Sheffield trades, are centred in the neighbouring town of Rem-

scheid, but under totally different conditions ; while to find the equivalent of the heavy steel trade of Sheffield it would be necessary to add the town of Essen to the above-named towns.

The district round Solingen is known as "Das bergische Land," and this hill country is a veritable storehouse of picturesque landscape. Well watered valleys and fertile fields alternate with wooded heights, which command striking views of the forest-clad Wupperthal. The visitor may well find it difficult to realize that this locality is the home of an important national industry as he gazes on such scenery.

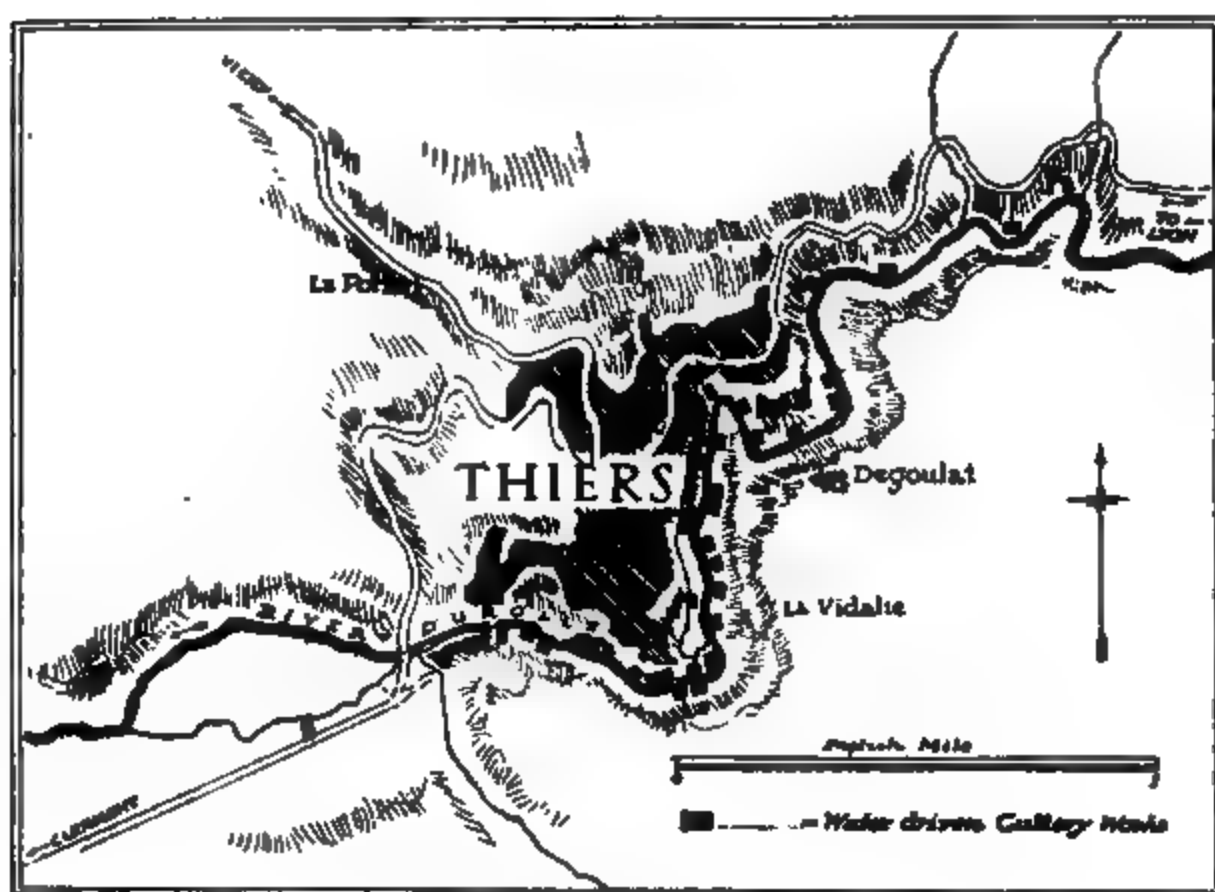
"Where the surging stream heaves o'er its wild, stonied way,
By rock and ravine where steep paths wind and stray,
Where the issuing reek and the roar of the wheel,
The flame of the forge, din of stithy and steel,
All proclaim the high purpose man's labour fulfils :
There, there is my Country, my Home in the Hills."¹

The same physical characteristics distinguish the neighbourhood of Sheffield, though the natural beauty of the latter locality is now sadly impaired by the industrial activities of a dense population. It is worthy of remark that while the centre of Sheffield lies in the smoke-laden hollows of the confluent valleys, the towns of the Solingen district crown the ridges of the hills—a situation much more conducive to purity of atmosphere. In past times both Solingen and Sheffield have profited by the abundance of water power on the small streams in their respective neighbourhoods, and by the easy access to suitable stone for grinding, while the famous Stahlberg mines in the

¹ From the German of Rudolf Hartkopf's, "Bergisches Heimatslied."

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SKETCH-PLAN OF DISTRICT ROUND SOLINGEN, GERMANY, SHOWING WATER
POWER FORMERLY EMPLOYED.



SKETCH-PLAN OF THIERS, PUY DE DÔME, FRANCE, SHOWING WATER POWER
NOW EMPLOYED

adjacent mountains of Westerwald formerly supplied Solingen with abundance of natural steel of an excellent quality, obtained directly by charcoal smelting. To-day both towns make use of Swedish iron, which is converted into steel in Sheffield. Again, in both places, many of the operatives who are "out-workers" have retained down to the present day some of the independence of the mediæval craftsmen. Although they no longer own the actual materials of their work, they supply at their own charges many of the necessary tools and appliances, and work at a time and place largely within their own discretion. Lastly, among these out-workers, the threefold division into "master" workman, journeyman (or "datal man," as he is called in Sheffield), and legally bound apprentice, is still sharply defined.

The basis of the Solingen craft in early times was the trade of the swordsmith. Workers from Damascus, that famous home of cutlery, are traditionally supposed to have settled in Solingen in the middle of the twelfth century; and the trade was further reinforced at different epochs by the settlement of skilful cutlers migrating from Flanders, from Styria, from Italy, from France, and even, it is said, from Toledo and Saragossa.

The earliest documentary evidence of the existence of the industry in Solingen relates to the beginning of the fourteenth century.¹ A hundred years later we find the craftsmen fully organized in three guilds or fraternities, which were mutually exclusive as to membership. The most important branch was that of the swordsmiths, whose earliest surviving charter was confirmed in 1472. Next came the grinders' and

¹ Cronau, "*Geschichte der Solinger Klingenindustrie*," 1885.

temperers' fraternity, founded in 1401. In the third were the finishers, united in 1412.¹ Originally the making of "little knives" was included in the work of the swordsmiths; but in 1571 the knife-makers in their turn attained to the dignity of an independent incorporation—six years later, we may note, than the earliest known ordinances of the Sheffield cutlers. The members of the Swordmakers' Companies, however, retained the right to exercise this humbler craft until the middle of the century following.

At the head of each craft were four councillors and a warden. In the case of the smiths a maximum daily output was fixed, which no master might exceed. This provision offered some security for good workmanship and provided against over-production. The members of all these groups were independent handicraftsmen, except the grinders and temperers, who worked either for the forgers or the cutlers. For the most part the masters were their own merchants and themselves disposed of their wares. The responsibility for the supervision of the trade rested with a court composed of representatives of the fraternities above named, together with that of the hilt and pommel smiths. The members of these bodies elected their deputies in annual conclave; and the court thus constituted was charged with the proper conduct of the industry, and with the enforcement of fines, two-thirds of which were paid over to the Prince. This method of administration lasted from

¹ The best account of the Solingen industry is that given by Thun, "Die Industrie am Niederrhein und ihre Arbeiter," Zweiter Theil: "Die Industrie des bergischen Landes," 1879. For a description of the modern industrial technique cf. Lürer, "Die Solinger Stahlwarenindustrie."

1487 until 1687, and these dates approximately mark the beginning and ending of handicraft proper.

Goods of the highest quality and workmanship and of remarkable artistic merit were being produced in Solingen in the sixteenth century, at a time when the simple craftsmen of Sheffield were limited to plain "whittles" and sheath-knives. Originally, all blades were forged by hand; but mechanical hammers, driven by water power, came into use in the sixteenth century, and a vain attempt in the year 1687 to prohibit the use of blades made in this manner only serves to mark the predominance of the new method.

The transition from handicraft to the domestic system coincided with the definite emergence of a separate merchant class. The merchants of the former period, although they gradually became a distinct group, yet retained their individual rights in the craft they were associated with. After 1687, however, they were specifically excluded from representation on the governing body of the gild. Nevertheless, they were united in a strong organization of their own, while the control which they exercised over the export trade enabled them to retain a firm hold on the industry. Within the limits of the eighteenth century their numbers rose from about a score to over a hundred.

The advent of the domestic system, since it expedited the reduction of the independent craftsman to the position of a wage-worker, was highly prejudicial to the self-sufficiency of the ancient fraternities. According to the ordinances of 1596, every cutler had to be fully qualified both as forger and cutler, and the old-time regulation as to maximum output was once more strictly enjoined; no master might employ

more than one journeyman and one apprentice at a time; and every knife-maker was required to strike his mark on all his work. Gradually, however, the industrial independence of the craftsman was undermined, and the appearance of fresh ordinances in 1687, devised for the purpose of preserving the master-worker in his ancient status, was powerless to halt the progress of the industrial revolution.

By the middle of the eighteenth century the transformation was complete. From this time the economic conflict has centred, not in the old issues of trade control and workers' qualifications, but in the struggle to maintain a definite standard of wages for the several branches of the industry. The grinders were the first wage-earning class, and already, in 1607, their wage-scale obtained official recognition. A similar protection was extended to other branches in 1673. The last general price-list issued under the gild system was ratified in 1789. It contained 211 specific prices for the detailed work of grinding knives, 200 prices for details of cutler's work, 10 prices for gold and silver decoration, 64 prices for fork-grinding, and a complicated list of prices for forging and grinding pocket-knives, arranged in seven classes. At the same time the ancient rule that no master should employ more than one journeyman and one apprentice was once more confirmed. In 1794, the scissors-makers—a body of about two hundred master-workmen and their assistants, hitherto outside the cutlers' organization—obtained a grant of incorporation, being the last section to be admitted to such privileges.

The domestic system brought in its train industrial anarchy. With the breakdown of trade supervision the efficiency of the workers was undermined and

much of the ancient skill was lost. From the standpoint of industrial technique the century 1750 to 1850 was one of steady retrogression. Solingen's age-long celebrity for fine workmanship became a dim memory. Cheapness took the place of quality; the mean triumphs of the unscrupulous merchant were substituted for the artistic achievements of the self-reliant craftsman. The final abolition of the gild organization in 1809 removed the last weak barrier against the exploitation of the workers, who were powerless to withstand the devastating spread of the "truck" system of payment. As was the case in Sheffield during the same period, this abuse was carried to great lengths by the merchant employers, reaching its fullest development during the generation from 1820 to 1850.

At the opening of the nineteenth century, during the closing years of the gild organization, the number of the cutlery workers in Solingen and the neighbourhood is estimated at about 4,700, distributed as follows:

CUTLERY WORKERS IN SOLINGEN, C. 1800.

| | "Privileged" Master Workmen. | Their Assistants. | "Unprivileged" Workers. | Total. |
|---------------------|------------------------------------|----------------------|----------------------------|--------|
| Sword-makers ... | 580 | 480 | 570 | 1,630 |
| Knife-makers ... | 400 | 600 | 700 | 1,700 |
| Scissors-makers ... | 200 | 200 | 100 | 500 |
| Grinders | 500 | 400 | — | 900 |
| Total | 1,680 | 1,680 | 1,370 | 4,730 |

It is noticeable that a considerable proportion of the total number of workers at this time consisted of

“wild” or unprivileged men, who were not included in the gild. They consisted principally of wage-workers in subsidiary trades, producing accessories required by the cutlers.

During the first half of the nineteenth century the merchants multiplied rapidly, their influence being perpetuated—after the breakdown of the craft organization—by the activity of the Chamber of Commerce. On the other hand, the small manufacturers, or “little master” cutlers, were yet more numerous, and their unrestricted competition led to a still further lowering of the standard of workmanship. Either they were beaten down and sweated by the shrewd merchants, or themselves travelled the country to dispose of their often inferior wares as best they might. The production of cast-metal scissors, which began about 1840, is symptomatic of the general decline in the reputation of Solingen goods at this period.

During the last half-century the process has been reversed, and the lost ground completely recovered. At the same time the transformation of the cutlery industry from a domestic to a factory organization has made steady progress; although in this respect there are very striking differences to be noted in the different departments. It has been carried farthest, with the greatest success, in the forging department, which was the earliest to adopt mechanical methods. The first large factory with steam power was established in 1851; and after that time the factory rapidly took over the work of the forger, and has more recently encroached in other departments. In the sword manufacture the change to factory production is an accomplished fact,

with the single exception of the highly skilled hardening process. This latter occupation is still confined to out-workers, and three families retain a strict hereditary monopoly, in spite of attempts to supplant them by trained factory workmen.

In all branches of cutlery the substitution of mechanical for hand hammers has transferred the forging process to the factories, and in this respect Solingen presents a contrast to Sheffield, where much of the best cutlery is still hand-forged. The machine-grinding of razors has also found a foothold in Solingen, and electric ovens for tempering have passed the experimental stage. On the other hand, the operations subsequent to forging, namely, the tempering, grinding, and glazing, filing, hafting, and finishing processes, still to a large extent take the form of out-work, and apparently are likely to remain so. A significant check has been given to the concentration in factories by the very rapid diffusion of electrical energy which has taken place among the out-workers; this enables them to have at their command, in whatever quantity may be desired, the assistance of motive power for their drills, lathes, grindstones, and polishing-wheels, and at the same time provides them with electric lighting—an important advantage where fine work is undertaken.¹ To the grinders this development has proved especially beneficial, since it has rendered possible the multiplication of private grinding-shops attached to dwelling-houses in the suburbs, and has thereby improved the position of many who would otherwise have to work either in the water-driven grinding-wheels which are still found on all the

¹ The price varies from 18 pfg. to 8 pfg. per kilowatt hour, according to the consumption.

streams in the district or in the steam-driven factories of the town. Thus by means of these private installations a positive extension of out-work has taken place, and fresh shops are being provided at the rate of two hundred per annum, half of which are utilized for grinding. It may, indeed, be said that all manufacturers give out more work than they carry on in their own factories, and the largest firm in Solingen, which employs 2,400 workers, only finds work for some 800 on the premises.

X The technical position of the industry at the present day is briefly as follows: of the four main stages of cutlery production, forging, grinding, cutler's work, and finishing, the first and last have passed to the factories, while in the others out-work is prevalent. In forging much machinery is employed. Die-forging under a drop-hammer is usual for scissors and razors. For table and pocket blades trip and tilt hammers are used, and in the case of the table-blade elaborate machines with two or four hammers operating simultaneously on opposite sides of the article. After forging, the superfluous metal is sheared off, and the exact contour given to the article in a cold press, thus attaining great regularity of form, and saving labour in the subsequent process of grinding or filing, particularly in the case of hollow-ground razors. Table-blades are ground on large sandstone wheels, often seven to nine feet in diameter, moistened by a trickle of water from a pipe. The top of the stone revolves towards the worker as he sits holding his work against the face of the stone, using both hands and knees to gain the desired pressure. This stage concluded, the same man carries his work through the processes of glazing and

GERMANY—TABLE-BLADE GRINDING, SOLINGEN.

GERMANY—OLD WATER-DRIVEN GRINDING WHEEL, NEAR SOLINGEN.

polishing, and works with glazers, etc., carefully fitted with hoods, and sometimes ducts to draw off the injurious dust. The final finishing polish is given after the goods are returned to the factory.

The grinding trades are protected from the deleterious influences inherent in the occupation by elaborate regulations.¹ The first *Polizei-Verordnung* for combating these evils by means of ventilating appliances was issued in 1875, when the industrial mortality had reached appalling proportions. An investigation twenty years later found the prevailing conditions still highly unsatisfactory, and a fresh police order was issued in 1898. Since this time the mortality has been reduced by more than one half, and the sanitary condition of the workshops is now altogether admirable.

The growth of the industry during the past century may be gathered from the following particulars of the employment provided by the grinding branches.² At the beginning of the nineteenth century there were 93 grinding-wheels in the Solingen district. Work was irregular, being checked by frost in winter and drought in summer, as well as by bad trade. Thus, the grinder commonly eked out his employment by spending part of his time cultivating a plot of land. Steam wheels were first introduced about 1850. In 1832 there were 89 wheels; in 1860 there were 105; in 1895 the total had risen to 189, of which 63 were driven by water and 107 by steam. There are now in all some 700 grinding-wheels, less than thirty being driven by water-power, while the

¹ Moritz und Röpke, "Ueber die Gesundheitsverhältnisse der Metallschleifer im Kreise Solingen," 1899.

² Ib.

majority are small establishments, equipped with electric installations.

NUMBER OF GRINDERS IN SOLINGEN.

| | | | |
|----------|-----------|----------|-----------|
| 1860 ... | ... 1,581 | 1895 ... | ... 3,727 |
| 1875 ... | ... 1,846 | 1898 ... | ... 4,027 |
| 1885 ... | ... 3,007 | 1908 ... | ... 5,033 |

Two-thirds of the grinders, owning their own shops or renting space and power, are now independent workmen. The total number of cutlery workers in 1908 was as follows :

CUTLERY WORKERS IN SOLINGEN, 1908.

| | Organized in Local Labour Federation. | Organized in National Labour Federation. | Unorganized. | Total. |
|---|--|---|--------------|--------|
| Grinders | 3,189 | 1,070 | 774 | 5,033 |
| Forgers | 378 | 731 | 120 | 1,229 |
| Cutlers, hafters, filers, and finishers | 2,381 | 2,558 | 895 | 5,834 |
| Total | 5,948 | 4,359 | 1,789 | 12,096 |

The figure here given as the total number occupied is compiled from trade union sources, and comprises the regular workers only ; it would be increased by a strict Census enumeration.¹ The

¹ The Census returns for the Solingen district for 1895 gave the following figures :

| | Establishments. | Persons. |
|---------------------------------------|-----------------|----------|
| Tool, scythe and knife smiths ... | 3,866 | 10,364 |
| Scissors, knife and tool grinders ... | 1,924 | 3,216 |
| | 5,790 | 13,580 |

total may be roughly subdivided, according to trades, as follows :

CUTLERY WORKERS IN SOLINGEN, 1908.

| | | | | | |
|--------------------|-----|-----|-----|-----|--------|
| Pocket-knife trade | ... | ... | ... | ... | 3,300 |
| Scissor trade | ... | ... | ... | ... | 3,200 |
| Table-knife trade | ... | ... | ... | ... | 2,000 |
| Razor trade | ... | ... | ... | ... | 2,000 |
| Sword trade | ... | ... | ... | ... | 500 |
| Various | ... | ... | ... | ... | 1,000 |
| | | | | | <hr/> |
| | | | | | 12,000 |

At the present time, from the point of view of international competition, Solingen occupies a position of great strength and security. In spite of the disastrous experiences of the past, the industry has again won a world-wide celebrity, and in certain branches, such as scissors, can defy competition on fair terms in neutral markets. It is not to be wondered at that the output has more than trebled during the last fifty years. The reasons for this great success are to be found first in the rapid development of mechanical forging—in which respect Sheffield has been entirely outdistanced. The second reason is the achievement of securing the preservation of out-work under the most satisfactory sanitary conditions, especially in the grinding branches, a development which has been aided on the one hand by the availability of electrical energy and on the other by stringent sanitary and factory regulations. In the third place, the workers have been able to offer a stout resistance to the debasing effects of unregulated out-work, by building up a labour organization remarkable alike for its inclusiveness and its solidarity.

After the dissolution of the gild in 1809, the

working cutlers were left without a corporate organization. An Industrial Court with a Board of Conciliation was established in Solingen in 1840, and this tribunal has done much to secure equitable conditions and harmonious relations with employers. The predominant influence on this court, however, was formerly that of the merchants. These presented a compact interest in opposition to the rank and file of the workers, who were deficient both in cohesion and in discipline.

The story of the modern labour organization begins with the concession of the right of combination in 1869. At first the cutlery workers united in sectional societies, each embracing those occupied in a single manufacturing process. As these unions grew in strength, the masters in their turn organized in employers' associations, in self-defence. Out of this rivalry there has now developed a system of federated organization on either side, a network of conciliation boards, and an inclusive system of recognized and guaranteed piece-work price-lists.

The most prominent of these employers' associations are those of the Sword Cutlery Manufacturers, the Pen and Pocket Knife Manufacturers, the Table Knife Manufacturers, the Razor Manufacturers, and two Associations of Forge Proprietors, one of which is confined to pen and pocket blade forge proprietors. Naturally, many of the employers belong to two or more of these societies, according to the scope of their business. The leading labour unions, with which these have to deal, are the Scissors Grinders' Union, with 1,250 members, the Table Blade Grinders, with about 900 members, the Razor Grinders, with 700 members, the Pen

and Pocket Knife Cutlers and Finishers, each with 650-700 members, the Table Blade, Scissors, and Fork Forgers with 560 members, the Pen and Pocket Blade Forgers with 200, the three unions of Table, Butcher, Bread, and Vegetable Knife Cutlers, together including 480 members. The Scissors Grinders' Union, to take a particular example, was founded in 1872, and the establishment of this powerful society was followed in 1874 by the organization of the masters in a body called the Associated Scissors Manufacturers. A conciliation board and guaranteed price-list were established in 1875. Similar privileges were acquired by the table-blade-grinders in 1887, and in other trades more recently. More than a score of craft organizations have now their own printed and ratified price-lists, many of them being very elaborate documents. The sections are not all equally strongly organized; but through the agency of the Labour Federation a fair measure of uniformity is secured even where the organization is most defective.¹ The strong societies often fight the battles of the weaker, and refuse to work for an employer who evades the established scale. In this way the price-list is often made effective even in the case of totally unorganized groups. The employers' associations naturally support the policy of universal price-lists, and put pressure on the unions to compel them to secure recognition of the lists by those employers who are outside the associations,


¹ As in Sheffield, the pen knife cutlers have been the most difficult to organize, and have suffered most for want of it. See C. Sch., "Zur Lage der Federmesserreider des Kreises Solingen," 1895.

these being for the most part small masters and merchants who are trying to undersell the large houses by paying low wages.

Among the outstanding features of this system there are two practices in full force at the present time which deserve a word of comment on account of their historical signification. One is the prevalence of the time-honoured custom of requiring employers to refund any deficiencies of wages arising out of proved evasion of the price-lists—a principle which goes back to the very early days of gild organization. The other is the rule that no master workman may employ more than one apprentice and one journeyman simultaneously—a traditional rule which is directly inherited from the ordinances of the sixteenth century.

Both the employers' associations and the labour unions are respectively consolidated in wider federations. Thus many of the employers' federations belong to the *Verband der Fabrikantenvereine*, which was founded in 1890, and which admits to membership not only employers' associations, but also individual manufacturers who have no opportunity of joining any existing organization. This federation forms a second line of defence against the trade unions, and a further means of negotiation in cases where the sectional conciliation board has failed to settle a dispute. Its membership includes the chief associations, namely, the manufacturers of scissors, table-knives, pocket-knives, forks, and razors.

Side by side with this federation are two others—the *Verein zur Wahrung der wirtschaftlichen Interessen der Solingen Industrie* and the *Verband von Arbeitgebern im Kreise Solingen*, both established in 1903. The former is composed of individual



manufacturers who own their own works, those who only employ out-workers being specifically excluded. It is not confined to members of the cutlery trade. Voting is regulated by the total amount paid in wages and salaries during the previous year. The membership is not large numerically, yet it represents probably more than half the wages paid in Solingen, and the association gains in solidarity what it loses in comprehensiveness. If one of the members is boycotted by a trade union, no other member may employ the defaulting workers. On the other hand, a lockout must be ratified by three-fourths of the votes at a special meeting.

The other association, the Federation of Employers in the Solingen District, tries to embrace all employers, whether as sectionally organized or as individual members. The object of the federation is to form an organization which may counterbalance the practically universal organization of the men. It has a large membership, including the Associations of Foundry Proprietors, Sword Cutlery Manufacturers, and Pocket Blade Forge Proprietors, and has on more than one occasion successfully intervened in disputes.

The Labour Unions are united on their side in two wider federations, as well as by a Central Committee of delegates, or Trades Council, with somewhat extensive functions. The purely local federation of cutlery workers known as the *Industriearbeiter Verband*, which includes more than two-thirds of the organized workers of the staple trade, is of recent origin. It is the manifestation of the spirit of sturdy independence and jealousy of external domination which actuates the workers of Solingen, and is a friendly opponent of the local branch of the national

Federation of Metal Workers (*Deutscher Metallarbeiter Verband*). This body is not confined to cutlery workers, but includes also metal-workers in miscellaneous trades, the latter constituting half the membership of the branch. The rivalry between these two federations has provided a keen stimulus towards effective organization, and has materially contributed to the success of the labour movement in Solingen.

As is peculiarly necessary in the case of a scattered body of workers, the publicity side of the labour organization is comprehensive and elaborate. In addition to frequent sectional and federation meetings and the maintenance of a commodious *Gewerkschaftshaus*,—or club-house for the trade union members, complete with bedrooms and restaurant,—there are also two vigorous labour papers. One of the latter is a daily, the *Bergische Arbeitstimme*; the other is the specific organ of the *Industriearbeiter Verband*, and is issued weekly under the name *Der Stahlwaren-Arbeiter*.

The fact that development of factory organization has gone on concurrently with the creation of the labour organization above described proves that the older crafts can prosper in the new circumstances of the industry. Indeed, it may well be that the concentration that has taken place has itself been a factor favourable to efficient organization. Though the transition to the factory system will run its course, it cannot be expected that the trade will for a long time to come be completely subservient to a machine process. The immense variety of products in each branch of the trade makes it very difficult to standardize patterns or to adapt automatic machinery. A single

forge may, for instance, have to deal with as many as 2,000 different patterns of pocket-knife blades. Again, in the grinding department, the whole of the work, except for some mechanical grinding of razors and table-knives, is dependent on delicate manual skill, and the variability of the consistency of both steel and stone makes the problem of automatic grinding doubly baffling. Apart from these difficulties, no method of machine-grinding has yet been devised which can give a cutting edge to an article, and thus the finishing at least must be done by hand. So long as handwork survives, the system of out-work is likely to continue. The importance of diffused electric power in this connection has been already noticed, and its influence in counteracting the tendency to concentration. A further condition essential to the success of out-work must not be overlooked ; this is the necessity of giving close attention to the improvement of technique and to the thorough training of apprentices. The former is encouraged in Solingen by the elaborately equipped *Fachschule*, devoted exclusively to promoting the interests of the cutlery handicrafts ; while the Industrial Code prescribes for all workers a compulsory term of apprenticeship, ratified by written indentures. The period of service is determined by the rules of the individual unions, and in most cases lasts for four years, beginning with the fourteenth year of age, though in the case of razor-grinding it is one year longer.

Thus, regarded as a whole, the position of the Solingen workers is exceptionally favourable, and it is not surprising to find that they present a fine body of men, remarkable alike for their prosperous industry, high intelligence, and sturdy independence.

BELGIUM.

In Belgium, which for centuries has been a great ironworking country, it is not surprising to find a long-established cutlery industry. Moreover, this manufacture, though now relatively insignificant, has nevertheless some comparative and historical interest. In view of the tradition which associates the rise of both the Sheffield and the Solingen cutlery industry with the settlement of immigrants from Flanders, it is pathetic to contemplate the decline of the handicraft in its ancient home. The *Corporation du bon métier des Fèvres*, which was established in the province of Namur and the bishopric of Liège in 1373, embraced within its membership some cutlery workers, as well as craftsmen in miscellaneous iron trades.¹ In 1563 and again in 1587 special ordinances were promulgated for the regulation of the trade, which had by this time expanded into a considerable industry, exporting its products to many adjacent countries. The ordinances of the smiths of Namur in 1603 made regulations for the manufacture of scythes, sickles, axes, knives, and edge-tools under the supervision of a mayor and jury elected annually by the members of the craft. The industry prospered after this time and attained its greatest importance during the eighteenth century. Since then it has steadily declined and has now almost disappeared. The cutlery industry was also established at Aerschot, Lierre, and Gembloux. In none of these centres, however, did the trade acquire

¹ Franquoy, "Histoire du progrès de la fabrication de fer dans la province de Liège," 1860. Cf. Smiles, "Huguenots," 122; also Pagé, "La Coutellerie," vol. vi. 1336.

GERMANY—SCISSOR GRINDERS AT SOLINGEN.

BELGIUM—OLD HAND-WHEEL AT GEMBOUX.

any great celebrity, and in Gembloux, where it still survives in a primitive form, its principal interest is to be found in the persistent survival of the typical small-scale organization of bygone centuries and in the close similarity which it presents to the traditional method of production in Sheffield.

In the cutlery trade of Gembloux, at the present time, the division of labour is totally disregarded, except that different workers specialize in particular articles, such as table-knives, penknives, or scissors. That is to say that each worker makes a complete article and is at once forger, grinder, and hafter. The largest factory employs not more than twenty-five men. Both the file and the grindstone are still employed in the shaping of the blade. The grindstone is sometimes turned by the grinder himself by means of a pedal lathe, sometimes by the help of another person, who revolves a large flywheel by hand. Sometimes a dog is used to turn the wheel. Nowadays a few of the more important shops are equipped with steam power, and the custom of renting space and power to independent workers is on the increase.

A radical transformation of the industry is, however, in progress. The competition of the cheap machine-made cutlery of Germany, France, and England is creating an industry of hafting, mounting, and finishing imported blades in small factories; hand-forging has greatly decreased, and mechanical production is making rapid strides. Thus the domestic system is giving place to a factory system on a small scale.¹

¹ For a fuller account see Ch. Genart, "L'industrie coutelière de Gembloux," 1899.

THE UNITED STATES.

It is instructive to turn from the ancient seats of cutlery manufacture in Europe and to look for a moment at the rise of the industry in the new world of America. For the century previous to 1850 the United States offered the best external market for the products of Sheffield; and in this way the English designs acquired priority over those of continental Europe. Thus, the American cutlery industry has been based on English traditions; and, in fact, its establishment owes much to the migration of workers from Sheffield. There was some manufacture of tools in the State of Pennsylvania as early as 1810; but the beginnings of cutlery making proper must be dated some twenty years later. The first American pen and pocket knife factory was opened in Worcester, Mass., in 1829, and from the very beginning made use of machine methods and a full division of labour. The manufacture of superior table cutlery was also well established at this time. By 1864 a single Massachusetts firm was producing some 500 different types of cutlery and consuming 200 tons of steel in a year.¹ The subsequent progress of the manufacture may be judged from the returns on the next page.²

It must be borne in mind that the figures opposite refer, not only to cutlery in the strict sense, but also to shears, axes, swords, joiners' tools other than saws, and to miscellaneous hand tools. It is, unfortunately, impossible to distinguish separately the production of

¹ J. L. Bishop, "History of American Manufactures," 1861, vol. ii. 338, 688.

² U.S. Census Bureau. Report on Manufactures, 1905, Part I.

CUTLERY AND EDGE TOOLS.

| | No. of Establishments. | Maximum No. of Wage Earners. | Value of Products. |
|------|---------------------------|---------------------------------|-----------------------|
| 1850 | 401 | 4,275 | \$ 3,813,000 |
| 1860 | 250 | 4,963 | 5,342,000 |
| 1870 | 184 | 4,428 | 5,623,000 |
| 1880 | 429 | 10,519 | 11,661,000 |
| 1890 | 474 | 8,708 | 11,111,000 |
| 1900 | 275 | 12,028 | 14,787,000 |
| 1905 | 254 | 14,545 | 18,615,000 |

knives, razors, and scissors from these inclusive totals; but it may be taken as a rough estimate that not more than one-fourth of these figures have reference to cutlery as defined above. The manufacture is now mainly localized in the States of Connecticut, New York, Massachusetts, and Pennsylvania. In 1905, half the firms reporting employed less than twenty workers and had an output of less than twenty thousand dollars each; but in two cases the output exceeded a million dollars. The following figures show the small average size of the concerns employed in cutlery production in earlier years.¹

AVERAGE NUMBER OF OPERATIVES PER FACTORY.

| | | | | | |
|------|------------------------|-----|-----|-----|----|
| 1850 | Cutlery and edge-tools | ... | ... | ... | 17 |
| 1860 | Cutlery | ... | ... | ... | 26 |
| 1870 | Cutlery | ... | ... | ... | 26 |
| 1880 | Fine cutlery | ... | ... | ... | 65 |
| | Scissors and shears | ... | ... | ... | 28 |
| | Cutlery and edge-tools | ... | ... | ... | 25 |

The high wage standard of America, when compared to Europe, makes it impossible there to prosecute industries which involve laborious and detailed manual

¹ U.S. Tenth Census, 1880, vol. ii., "Manufactures."

adjustments. Since much of the cutlery trade, as carried on in Europe, is of this character, it is important to note the extent to which American productive organization has overcome the above difficulty. Clearly, the more complex and the more diversified the product, the greater will be the obstacles to the supersession of hand labour. Pocket-knives, which present an infinite variety of pattern and type, are therefore less suitable for machine production than table-knives, which are more easily standardized, and the component parts of which are few in number. Hence, it is not surprising that down to the present day, while the production of table-knives has long been firmly established in the United States, the demand for pocket-knives has had to be satisfied, for the most part, by foreign importation; and this in spite of the long-continued protection of a 50 per cent. import duty.

It may indeed be said that the cutlery industries present a direct challenge to American mechanical ingenuity; for many of them, as we have seen in previous chapters, are still closely confined by the restrictions of a manual technique. What has been the American response? Briefly, that where mechanical devices cannot be adjusted to the production of the traditional product, the product must be modified to the demands of the machine. Hence, the standard American table-knife is a rigid, metal shape, handle and blade forged in one piece, the whole being finished by electroplating—an implement eminently suited to factory production. The razor was less readily adaptable, but the solution was found, nevertheless; and a world-wide demand has been created for the safety razor, in which hand forging and hand

grinding are both practically eliminated. These are commercial triumphs of no mean order, since they involve, not so much the satisfying of an existing demand, as its transformation, and its adjustment to a new productive technique.)

The American cutlery factory is well managed and well equipped. There is no out-work, and consequently the workers' time is fully economized, and no pains are spared to facilitate the rapid handling of goods. Machinery is employed wherever possible, and its application has advanced farther than in Europe. Blades are "drop-forged," or "fired," or "pressed." Mechanical grinding is used for all simple operations, though the final grinding is usually performed in the English manner and by Sheffield workmen,—except in the case of scissors, where the German tradition is dominant, and the workman sits in front of the grindstone instead of behind it. There are no deductions from wages on account of work-room and power, and in nearly every case the tools are furnished by the employer.¹

¹ Cf. Moseley Industrial Commission, 1902. Report by Mr. Robert Holmshaw.

CHAPTER XV

COMPARISONS

THE purpose of this book is to trace the course of industrial evolution from handicraft to machine industry as exemplified by the cutlery trades, since this group of industries furnishes a leading example of the continued survival of the characteristic features of the domestic system. But, in order that we may better appreciate the significance of this fact, it will be well to recall once more to our minds the steps by which the industrial revolution has been accomplished in other trades, and thus to gain some insight into the relative rapidity of the movement away from the domestic form of industry.¹

The industrial revolution is prominently associated with the cotton industry; and the suddenness with which domestic cotton-spinning by hand succumbed before the onslaught of power-driven machinery has given rise to a popular conception of the industrial revolution which ignores the very gradual and unequal course of the change in other industries. It is very necessary to combat the fallacy which a careless generalization from this particular industry has generated. The features of the movement to which we must direct our attention are, firstly, the approximate

¹ See Appendix I, Note on the Survival of Small-scale Industry.

date at which it can be said that the factory system first became dominant in the great staple industries (rather than the date of its introduction, which latter is sufficiently indicated by the appearance of important mechanical inventions); and, secondly, the proportion of the total industry of the country which retains the older forms, and remains exempt from the sway of the factory system proper, in modern times.

In such an inquiry we are hampered by the want of a simple test by which to distinguish the factory system from its predecessors. We are compelled to recognize that the change is not simple but complex, that not one but many industrial revolutions have taken place in the last two centuries. There are, however, four chief ways in which we may measure the movement from the domestic to the factory organization of industry. Firstly, we have the evidence of that loss of the ownership of and control over the tools and implements of the trade which indicates the passing of the domestic worker proper. Secondly, we note how the congregation of many workers in a single shop marks the growing concentration of labour—though this does not necessarily involve the abandonment of the capitalistic function by the worker, since the latter may, and often does, continue to own his tools and pay rent for the space and power provided. Thirdly, we may take as a test the size of the industrial group, looking to large-scale industry as typical of the modern system, and regarding the small groups of (say) from five to ten workers as typical of a simpler industrial structure, regardless of whether such workers retain or not any capitalistic interest in the goods they make or in the provision of tools and working accommodation.

Lastly, we may lay stress on the introduction of mechanical motive-power and elaborate self-acting machinery as witnessing the appearance of a new order of production.

X X Before turning to the consideration of particular industries, let us begin by asking a preliminary question. What was the period of most rapid expansion in British industry? The answer to this simple inquiry will give us a clue as to the epoch to which the industrial revolution should be referred. If we glance at the growth of the English population and the expansion of the staple industries of the United Kingdom during the past two hundred years, we shall see that the period of most rapid development occurred in the second quarter of the nineteenth century, rather than in the last quarter of the eighteenth century (with which the industrial revolution is commonly associated). The exceptional character of the early development of the cotton manufacture does but emphasize the broad truth of this conclusion. It would further appear that this period of most rapid development coincided with the period in which England experienced the acutest industrial distress; such synchronization is indeed perfectly intelligible.

The table opposite presents in short compass the salient facts which illustrate the rapidity of industrial expansion in the great staple industries. It will be seen that with regard to both population, iron and coal production, and the consumption of imported wool, the era of most rapid increase fell in the generation 1820-50. With regard to cotton, however, the greatest rate of growth coincides with the epoch when the great textile inventions made

GROWTH OF POPULATION (ENGLAND AND WALES) AND OF STAPLE INDUSTRIES (UNITED KINGDOM) IN THIRTY-YEAR PERIODS SINCE 1700.

COMPARISONS

| POPULATION. | | | IRON PRODUCTION. | | | NET IMPORTS RAW COTTON. | | | NET IMPORTS RAW WOOL. | | | COAL PRODUCTION. | | |
|-------------|-------------------|----------------------|------------------|--------------------|----------------------|----------------------------|--------------------|----------------------|--------------------------|-------------------|----------------------|------------------|------------------|----------------------|
| Year. | Millions. | Percentage Increase. | Year. | Thousand tons. | Percentage Increase. | Year. | Million lbs. | Percentage Increase. | Year. | Million lbs. | Percentage Increase. | Year. | Million tons. | Percentage Increase. |
| 1700 | 5.1 ¹ | % | | | % | Av. 1701-5 | 1.17 ⁴ | % | | | % | | | % |
| 1730 | 5.7 ¹ | 11 | 1720 | 10 ³ | 120 | 1730 | 1.54 ⁶ | 31 | | | | | | |
| 1760 | 6.5 ¹ | 12 | 1750 | 22 ⁴ | 210 | 1764 | 3.87 ⁶ | 151 | 1766 | 1.93 ⁶ | 33 | | | |
| 1790 | 8.5 ¹ | 34 | 1788 | 68 ⁵ | 488 | Av. 1790-4 | 27.7 ⁴ | 615 | 1790 | 2.58 ⁶ | 280 | | | |
| 1821 | 12.0 ² | 48 | 1820 | 400 ⁴ | 650 | Av. 1820-4 | 149 ⁴ | 415 | 1820 | 9.77 ⁶ | 665 | 1830 | 16 ⁴ | 306 |
| 1851 | 17.9 ² | 45 | 1850 | 3,000 ⁵ | 156 | 1854 | 762 ² | 97 | 1850 | 74.3 ⁶ | 201 | 1854 | 65 ² | 126 |
| 1881 | 26.0 ² | 38 | 1880 | 7,700 ² | 5 | 1884 | 1,500 ² | 27 | 1880 | 224 ² | 87 | 1880 | 147 ² | 80 |
| 1911 | 36.0 ² | | 1908 | 8,050 ² | | 1909 | 1,920 ² | | 1909 | 418 ² | | 1909 | 264 ² | |

¹ Porter, "Progress of the Nation."
 ² Macpherson, "Annals of Commerce."
 ³ Scrivenor, "History of the Iron Trade."
 ⁴ Statistical Abstract.
 ⁵ McCulloch, "Dictionary of Commerce."
 ⁶ Cunningham, "History of English Industry and Commerce," p. 693.

their appearance, and it is for this reason that the industrial revolution is so commonly ascribed to the latter half of the eighteenth century, instead of to the first half of the nineteenth century to which it more properly belongs.

THE IRON TRADE.—THE CHAIN AND NAIL TRADES.

We have already had occasion to glance at the progress of the British iron industry down to modern times.¹ In this case the adoption of large-scale production must be dated at least as far back as the seventeenth century, and indeed long before that time the relatively large capital and extensive labour force required for the operation of furnaces and forges of even the moderate size then employed, gave the industry a character far removed from the category of handicraft production. It is not, therefore, necessary for our purpose to trace in detail the development of the primary forms of metallurgical industry during the past century, nor of mining—to which latter the same considerations apply. In the case of the minor metal trades, however, it is possible to find numerous instances of the survival of ancient industrial forms, and of industrial transformation in comparatively recent times, which offer a sufficiently close parallel to the story of the cutlery crafts, which it has been our principal business to relate. The manufacture of guns, of scientific instruments, of clocks and watches, of locks, of brass and tin-ware, a hundred and one small industries in which the older methods of production may still be found and studied, will serve as examples.

Here we will content ourselves with a brief reference

¹ See Chapter III.

to a single typical example of this class, and select the case of the chain and nail industries for somewhat closer examination. These trades have long had their seat in the towns and villages of South Staffordshire and Worcestershire. The centre is to be found in Dudley, the birthplace of the Midland iron trade, and still an important industrial locality. The cottages in the nailing villages still bear unmistakable marks of the occupation of their inhabitants. Behind every row are to be found a number of small workshops, generally reached by an open passage from the street, but occasionally only approachable through the house to which they are attached.

The equipment of the shops and the method of manufacture are exceedingly simple. A small hearth and bellows for heating the rod, a small anvil, a few dies and peculiar hammers, and an "oliver" are all the tools required. The oliver is the most important and characteristic of these implements: it is a large hammer weighing from 10 lb. to 30 lb., according to the class of work to be done, fixed by means of a long arm to an iron cross-bar which works between two fixed posts. A crank and rod connects the cross-bar with a long wooden treadle, so that when the worker puts his weight on the treadle the hammer is brought down forcibly on to the anvil; the hammer after striking a blow is carried back to a vertical position by means of a spring made of a long and flexible beam of wood fixed overhead. Where a very heavy blow is required several persons may jump on the treadle simultaneously.

We hear first of the trade in 1584, when it appears as a fully established handicraft, with regulations restricting admission to the trade to duly trained apprentices,

insisting on the employment of one journeyman to every two apprentices, prohibiting any journeyman from setting up as a master unless he were thirty years old or were married, and claiming for the occupation the full status of an independent gild.¹ By the eighteenth century, however, the domestic system of production had taken the place of the handicraft organization, the nailers being now home workers who laboured for well-to-do factors residing in the principal towns.² The condition of the workers even at this period was miserable in the extreme; they had to work twelve hours a day in order to earn 3s. a week; indeed, the only plenty they knew was that of "rags and children." Including these children,—who were put to work before they were seven years old,—the number employed in the district approached 40,000 at the end of the eighteenth century. In 1830 there were 50,000 nailmakers, but by 1865 this number had fallen to 20,000.³ Twenty years later there were but 15,000, and even this number has since steadily declined, and is now rapidly vanishing.

In the eighteenth century wages were regulated by official price-lists determined and sanctioned by meetings of the masters, payment being made when the goods were delivered at the warehouse from which the nail rods were obtained. The truck system of payment was extensively practised, and indeed was still in full operation as late as the sixties of last century. The chief curse of the trade, however, during the nineteenth century has been the activity of a

¹ "Victoria County History of Worcester," vol. ii. 272.

² Kenward, "Harborne and its Neighbourhood."

³ Cf. Ephraim Ball in Timmins' "Industrial History of Birmingham and the Midland Hardware District," 110.

swarm of "little master" middlemen and truck-masters. These men were ubiquitous, overrunning the trade, beating down prices, making the maintenance of standard rates impossible, and preying on the necessities of the workers. The legitimate and recognized nailmasters, being manufacturers of substance and position, were usually good employers, who consistently opposed unreasonable reductions of prices and strove to maintain standard rates of payment throughout the trade.¹ Their efforts and example were, however, powerless to check the operations of the small factors, or "foggers" as they are locally termed, who found means, by taking advantage of necessitous and thriftless workers, to buy and sell below the established rates. A nailmaster, describing the operations of these gentry in 1842, writes :

"They are no better than rogues. They have their weights and scales wrong, so that if they buy 50 lb. of nails they will really have 51 lb. and sometimes more. The nails are generally bad, which hurts the trade again. Then they pay in truck, and they have other manœuvres beside, so that the men are oppressed in three or four ways in every transaction, and it is said they have not more than 15s. or 16s. in the pound in reality."²

The existence of such middlemen is a common feature of the domestic system of industry, especially where the trade is in a condition of decay or transformation, and the labour market consequently overcrowded and badly organized. But the evils arising from the

¹ By means of a definite organization of employers known as the Nailmasters' Association.

² Report by Labour Correspondent of Board of Trade, P.P. 385 of 1888, p. 8 ; *q.v.* for a full account of the organization of the trade at that time.

prevalence of such little masters, which we have already noticed in the cutlery trades, will be found in an intensified form in this more widely scattered cottage industry. As in Sheffield, again, the list prices which set the nominal standard for payment have rarely been effective, the fogger always obtaining a discount off the price paid by the better class of masters, and the latter rate, in turn, being depressed in order to compete with the cheaper work. Occasionally such reductions have led to serious strikes, as, for example, in 1842, when the military had to be called out to suppress the riots at Dudley; or, again, the strike of 1872, as a consequence of which the nut and bolt trade, we are told, "ran into machinery."¹ But more commonly the lack of cohesion among the workers made them powerless to prevent undercutting of prices. Equally ineffective were the efforts of the Masters' Association. In 1880 a Board of Conciliation, consisting of twelve masters and twelve workmen, was organized in the hope of enforcing the observance of the standard list, but even this joint effort broke down in a few months. The Nailmakers' Union was disbanded about 1895, when the average earnings for a man in full work did not exceed 10s. a week; in some classes of work as many as 200 nails had to be made for 1d., each pair being separately forged by hand, and requiring in each case a considerable amount of labour for their completion.

During the last thirty years the trade has been almost extinguished by the competition of the machine-made nails, though there are a few who still make a living by the production of some speciality. In

¹ House of Lords Committee on Sweating, 1889, 3rd Report, Qu. 19789.

1907, out of a total product, for the whole industry, of £534,000, the hand-made wrought nails represented an output of only £51,000.¹ Probably there are not to-day more than a thousand workers, including a few hundred women, engaged in the production of hand-made nails—mainly hobnails for boots—and no young people are coming into the trade. Even this remnant of what was formerly a mighty army of workers, however, exhibits very clearly the ancient character of the trade. Among them are still to be found true handicraftsmen, who not only work in their own shops, but also buy their own iron, make their own tools, and sell direct to the consumer, or at least to the local cobbler or retail iron-monger.

Historically the chain-making trade has been of less importance than the manufacture of nails. It cannot, as the latter can, lay claim to a remote origin, and it has never employed so large a number of persons. In 1844 the trade society, known as the "Chain and Trace Makers' Anti-Truck and Price-Protection Association," was founded, and made a successful stand for the abolition of truck payments and for the establishment of a uniform scale of payment. Male members of the society were restricted to the employment of one apprentice, no apprentice being allowed till the member had worked twenty years at the trade; female members were disqualified from hiring either journeyman or apprentice. In 1859-60 there was a prolonged struggle, accompanied by many trade outrages, which principally took the form of bellows cuttings, but occasionally were accompanied by gunpowder explosions. This dispute

¹ Census of Production, Cd. 5254.

issued in the establishment of an improved piece-work scale.¹ In 1866 there were about 2,000 male workers employed in the chain factories of the Black Country and about 2,000 other workers, including women and children, in domestic workshops. Since this time, however, the growth has been rapid, and there are now some six to seven thousand out-working chain-makers at work, including about one thousand women. The principal centres are Cradley Heath and Netherton. The importance of the industry, and the large part still played in it by hand-forging, both within the factories and outside, may be judged from the Census of Production returns ; these give the value of the total output of chains and cables as £626,000, of which only £39,000 represents machine-made goods.²

While the manufacture of heavy chain and cable is a factory trade, the smaller varieties of chain, half-inch size and below, are still made by out-workers under the domestic system. Despite the growth of the factory trade there are now more out-workers than ever. The master gives out the iron rods, three to eight feet in length, and the chain-maker's task consists in cutting off, shaping, and welding each successive link on to the chain. The smallest sizes can be made by women and children, and the workers either occupy their own domestic shop, or hire the necessary accommodation—called a "stand" or "stall"—elsewhere, or else, as is now common, work ten or twelve in a shop under a little "shopmaster," who provides all necessary tools and accommodation. Many of the factors

¹ See the account by Godfrey Lushington in the Report of the Social Science Association, 1860, 147.

² Census of Production, 1907, Cd. 5254.

in the lighter branches of out-work are women. Fourpence per week is an average rent for hearth-room, but when tools and fuel are supplied to the worker a deduction of 3d. in the shilling is made from the standard price. Firing costs about 1s. a week per worker. The heavier material is usually delivered and collected by the factor or master, the regular charge for this service being 2d. per $\frac{1}{2}$ -cwt. ; but the most usual plan in the case of out-workers is for each worker to fetch and deliver his work in person, often carrying the burden on his head.

Recent legislation has brought about a definite alleviation of working conditions in these trades. In the first place there is the Trade Boards Act, which applies to the chain trade though not to the hand-made nail industry. This Act provides for an official scale of payment, drawn up by consent of masters and men, which is enforced by active inspection. The Act works acceptably and is little evaded; but though it has thus produced some improvement, evasion is not unknown, the small sweater sometimes demanding and obtaining a discount from the official minimum rates. The Health Insurance Act, again, has had the further effect of encouraging those who give out iron to sell the same outright, and so get rid of the troublesome liability to insure their out-workers as employed persons within the meaning of the Act.

COTTON.

Let us next turn to the great cotton industry, since it is here that we are accustomed to watch the uprise of the modern factory system in all its

essential details. A brief review of the history of the trade will show that, even in this case, the transition was less sudden than is often realized.

The industry was firmly established in its present Lancashire home by the middle of the seventeenth century, though for more than a century after that time it was not purely a cotton industry, the weft alone being made of cotton fibre, while the warp was of linen. At first the handicraft type of organization prevailed. The weaver owned and usually made his own loom, bought his materials in the local market or from the spinsters of the neighbourhood, and afterwards sold his goods himself. But in the eighteenth century, owing to the rapid increase in the magnitude and complexity of the trade, and the appearance of the Manchester merchant as factor and middleman, the weavers—from the middle of the century onward—began to obtain their materials from the merchants, to whom the finished cloth was returned. Thus was the domestic system introduced. Many merchants were also manufacturers, and took apprentices themselves. But it was in the spinning branch that the factory method first took hold; indeed, spinning seems to have passed almost suddenly from the small scattered household or handicraft form to the power-driven factory. It was, in fact, not so much the displacement of an old-established industry as the creation of a new one. Hargreaves's Jenny—which relied on human power for drawing the threads but drew many threads simultaneously—appeared in 1764, and five years later Hargreaves established his first mill. Arkwright's water-frame—in which the thread was drawn out by passing between sets of rollers revolving at different speeds—was introduced

in 1769, and Crompton's mule—which united the principles of the two former—was completed in 1779. Watt's engine was first employed to supply factory power in a mill at Papplewick in 1785. From this point the subsequent development was truly amazing in its rapidity. There were 20 mills in 1780. In 1790 their number was 150. By 1811 the number of power-driven spindles on the three types of machine—water-frame, jenny and mule—was more than five millions.¹ Though there was still much subsidiary handwork, yet the factory was already supreme in cotton spinning, in spite of the existence during the first quarter of the nineteenth century, side by side with the wealthy millowners, of spinners who owned a few machines, rented power in a tenement factory, and worked for a Manchester merchant on a commission or piece-work basis.²

In weaving, however, the victory of the factory was postponed for a generation. Though the device of the fly-shuttle was introduced by Kay in 1738, it was not much used before 1760, and Cartwright's power-loom, which appeared in 1787, was not employed until 1801.³ In 1820 there were 2,400 power-looms in use, and the number had grown to 100,000 by 1833. But as yet the power-loom affected only particular kinds of work, and in Bolton, for example, there were, in 1834, 7,000 to 8,000 handlooms at work and only 733 power-looms. Throughout the trade generally there were still five handlooms to every two power-looms.⁴ The subsequent sudden

¹ Chapman, "Lancashire Cotton Industry," 58.

² Chapman, 63.

³ Porter's "Progress," 178.

⁴ Porter, 188.

reversal of this predominance will be made clear by the following figures :¹

NUMBER OF LOOMS ENGAGED IN COTTON WEAVING.

| | | | | | Hand-looms. | Power-looms. |
|---------|-----|-----|-----|-----|-------------|--------------|
| 1829-31 | ... | ... | ... | ... | 225,000 | 80,000 |
| 1844-46 | ... | ... | ... | ... | 60,000 | 225,000 |

Thus, by 1840 the factory system was dominant throughout the British cotton industry. Comparing the total number of persons employed on cotton fabrics in Great Britain according to the Census of 1841—377,662—with the number in factories as enumerated by the factory inspectors in 1839—254,763—we may conclude that at least two-thirds of the cotton workers were factory operatives. True, the gigantic competition of the power-loom had not destroyed the use of the handloom, but though the total number of handloom cotton weavers was still little, if at all, diminished at this time, yet they were themselves being absorbed into handloom factories and so losing their ancient characteristics.²

WOOLLEN AND WORSTED.

Very different has been the course of events in other branches of textile manufacture, of which the most important is the ancient staple industry of woollen and worsted. Here we see a development which by contrast with that of the cotton trade has been gradual, complex, and infinitely less spectacular.

¹ Ellison, quoted by G. H. Wood in Hutchins's "History of Factory Legislation," 302.

² Handloom Weavers Commission, Report by Mr. Hickson, P.P. 639 of 1840, pp. 9, 12.

We must recollect that in the woollen trade the domestic and even the capitalistic system appeared at a very early date, and that the localization of the trade in the great factory centres of Yorkshire and Lancashire is comparatively recent. Great clothiers, such as Thomas Blanket of Bristol, in the fourteenth century, and even the more prominent examples found in the sixteenth century, were of course exceptions to the general rule, and the capitalistic form of organization, partly in consequence of official repression, made no headway until the eighteenth century. The domestic system, however, was extensively developed before 1700. On the other hand, the influence of the great eighteenth century inventions failed to produce any sudden or revolutionary change, chiefly because the materials of the trade were less readily adapted to mechanical methods of manufacture than was the case with cotton. Moreover, the nature of these materials caused a radical division of the trade, conditioned by differences in the manufacturing processes, into *worsted* products—made from yarn composed of long fibres lying parallel to one another—and *woollen* goods, in which the shorter fibres cross and engage with one another in all directions. For these among many other reasons, much greater complexity of organization has prevailed in these trades as compared with their Lancashire rival.

The earliest factory process was the mechanical method of carding wool, an operation preparatory to the spinning of woollen yarn. This was freely employed at the beginning of the nineteenth century. On the other hand, the mechanical combing of wool destined for spinning into worsted became common only after 1850. In spinning and weaving, however,

the worsted trade was adapted to factory production long before the more important woollen branch. Thus in worsted spinning the factory system was well established by 1815, Arkwright's frames being chiefly employed. Power-spinning of woollen yarns by means of the mule slowly forced its way into general use between 1830 and 1860, but even in 1856 the number of power spindles in the minor branch of worsted spinning was nearly as great as those producing woollen yarns.¹ Even in 1860 the use of hand-mules was not completely superseded. Thus we cannot date the triumph of mechanical spinning of woollens much before the middle of the century.

In weaving, as in spinning, the worsted trade was quicker than the woollen to adopt the mechanical system. In Bradford, the centre of the worsted industry, the first factory was established in 1795, but the power-loom was only introduced thirty years later.² In 1810 there were already five mills, and by 1830 this number had increased sixfold. In the Huddersfield woollen trade, on the other hand, there were still no factory weavers in 1825.³ Ten years later there were in all about 4,000 power-looms in use, of which one-half belonged to the smaller branch of worsted weaving. Even after a further interval of twenty years the number of power-looms employed in woollens was only 14,000, while the worsted looms numbered 38,000. Thus the new method was still in its infancy at the time of the Commission of 1840. The handloom

¹ Clapham, "The Woollen and Worsted Industry," 134. McCulloch, "Essays," 1858, p. 477.

² McCulloch, "Essays," 480.

³ Dechesne, "L'industrie de la laine en Angleterre," 1900, p. 121.

had for some time been shown to be well adapted for the production of plain goods, whether of worsted, woollen, linen, or silk. But as yet the power-loom was so little employed that its competition had not affected wages.¹ Out of the 167,000 persons who in 1841 were returned as employed in the British woollen and worsted trades, only 85,000, or 58 per cent., were enumerated as working in factories,² while in Ireland the proportion of factory workers was still quite insignificant—1,231 to 77,746. A generation earlier it had seemed quite improbable that the domestic system would ever be superseded by factory production, and the beginnings of the latter system were regarded as improving and rendering more secure the hold of the domestic workers on their trade.³ But in 1840 there existed already in the neighbourhood of Leeds a few large factories in which all the processes of cloth-making were carried on, from the breaking of the fleece to the packing of the cloth for market.⁴ For the most part, however, the domestic system still prevailed, unaffected by the great inventions. The material was supplied by the capitalist, who paid a fixed rate for finished cloth. The loom was usually the property of the weaver or hired by him. A man who had no loom either worked as journeyman to a well-to-do weaver who gave him two-thirds of the piece-price of his cloth, or he became a shop-weaver working in a manufactory. Neither the factory weavers nor the journeymen, however, formed a

¹ Handloom Weavers Commission, 4th Report, p. 24. Report by Mr. Hickson, 14, 20-1. Baines, "Cotton Manufacturer," 239.

² Comparing the 1841 Census with Factory Returns for 1839.

³ Committee on Woollen Trade of 1806.

⁴ Handloom Weavers, Assistant-Commissioner's Reports, iii. 528.

large proportion of the weaving population.¹ There were even a certain number of weavers working on the still more primitive plan of producing cloth in private houses from the yarn spun by the family ; but this was to be found only in the Highlands of Scotland, in Ireland, and to a slight extent in Lancashire and Nottinghamshire.²

The next generation saw a complete change. We may perhaps date the supremacy of the power-loom in worsted weaving from about 1840, and in woollen weaving some twenty years later. The decline of the domestic manufacture is indicated by the fate of the Cloth Halls in which their wares were disposed of. The Bradford Hall was the first to fall into disuse, since the worsted trade earlier adopted the capitalistic form.³ It was still in use in 1840, but in 1853 was definitely closed. The Huddersfield Cloth Hall, on the other hand, was attended even in 1851 by nearly three hundred rural weavers,⁴ while the Leeds Hall, in which locality the domestic weavers enjoyed still more persistent prosperity, was still in use in 1873.⁵ To a small extent domestic handloom weaving survives

¹ Handloom Weavers Commission, 4th Report, p. 2.

² Handloom Weavers Commission, Assistant-Commissioner's Report, Part I, p. 5 ; Part II, p. 352.

³ The contrast between the woollen and worsted industries and the approximation of the latter to the cotton trade rather than to the woollen is suggested by the following figures :

NUMBER EMPLOYED PER FACTORY.

| | | | Cotton. | Worsted. | Woollen. |
|------|-----|-----|---------|----------|----------|
| 1850 | ... | ... | 171 | 159 | 49 |
| 1890 | ... | ... | 208 | 196 | 82 |

⁴ Dechesne, *loc. cit.*, 85.

⁵ Baines, "Yorkshire," iii. 192, quoted Dechesne.

even to-day. The Census of 1901 enumerates some hundreds of these workers in Yorkshire itself, while in the Scotch, Irish, and Welsh cottage industry not only hand-weaving but even hand-spinning may still be found. The modified form of small industry in which small master-weavers rent the space and power they require and employ a few hands is common in Yorkshire to-day.

LINEN.

Even more clearly were the ancient features retained in the Irish linen trade, where there were in 1840 but few factory workers in an industry giving employment to a very large population. At this time the weaving handicraftsmen in Ulster formed a considerable body.¹ They either prepared their own yarn or purchased it, and sold it in the local market when converted into cloth. Usually, however, this was a subsidiary occupation to farming and was rapidly dwindling in importance, the number of webs sold in the public market of Londonderry, for example, having diminished from 29,000 to 10,000 between 1810 and 1837.² But if handicraft was declining, the domestic system was gaining ground, and the majority of the weavers, though owning their own looms, had no property in the materials manufactured. The beginnings of the factory method were evident in Belfast, but as yet its hold was not strong elsewhere. Hand-spinning, again, was dying out, though at Coleraine a public market for hand-spun yarns was still held.³ The adoption of machine methods in linen

¹ Handloom Weavers' Commission, Hickson, 22.

² Handloom Weaver's Commission, Assistant-Commissioner's Report, p. 107.

³ *Ib.* 725.

weaving became more general after 1850, at which date there were only 80 power-looms in use. The steady modernization of the industry since that date is sufficiently demonstrated by the fact that in 1909 there were 35,622 such looms in use.¹ A recent investigation into the conditions of employment prevailing in the subsidiary "making up" branches of the trade, as distinct from the primary processes of spinning and weaving, shows that there is a vast amount of out-work in these branches, and all the characteristic features of a predominant domestic system of industry. The number employed in factories and workshops is about 22,000; the number of out-workers is considerably greater. In the towns the factory is the distributing centre; in the country districts the workers are supplied by travelling agents, who give out and collect the work performed by the cottagers. The latter use this employment to supplement the slender subsistence they gain by agriculture. All the typical features of such a system are in evidence: exceedingly low rates of payment, irregular work, long hours, and excessive labour for children. It is proposed—though with a dubious prospect of success—to attempt to alleviate these evils by the application of the Trade Boards Act.²

RIBBONS.—HOSIERY.

Of the minor textile trades the most interesting are the ribbon weaving of Coventry and the frame-work knitting of hosiery at Nottingham. In neither of

¹ R. H. Reade in *The Times*, November 13, 1911.

² Committee on Making Up Trades of the North of Ireland, Cd. 6509, 1912.

these had the employment of steam power passed the experimental stage at the period we are now considering.¹ In ribbon weaving a rival to the original "single-hand" loom had appeared in the "engine" loom, which was introduced from Holland about 1770 and which manufactured several breadths simultaneously. In 1823 the more complex "Jacquard" loom for weaving figured ribbons was introduced. The newer appliances did not, however, supersede the old; their relative importance may be judged from the following returns of looms employed in Coventry and the neighbouring villages:

RIBBON LOOMS IN COVENTRY.

| | | | | | 1818. | 1838. |
|-------------|-----|-----|-----|-----|-------------|--------------|
| Single hand | ... | ... | ... | ... | 5,483 | 7,489 |
| Engine | ... | ... | ... | ... | 3,008 | 3,504 |
| Jacquard | ... | ... | ... | ... | — | 2,228 |
| | | | | | <hr/> 8,491 | <hr/> 13,221 |

At the opening of the nineteenth century a simple domestic system of production prevailed, but the collapse of the industry following on the speculative boom of 1813 reduced the "undertakers," as the responsible domestic weavers were called, to the position of dependents on individual masters. The undertaker confined himself to superintendence of the work of his looms, usually seven or eight in number, and to the preparation of warp. The new class of journeymen out-workers still supplied their looms and shop-room, and were assisted by women and children in the execution of the work. This was the dominant system; but a few hand-factories were also to be found in Coventry, while in the silk weaving

¹ Handloom Weavers Commission, 1840, Assistant-Commissioner's Report, Part IV, ii. 298.

trade elsewhere a considerable number of power-looms were in use. Even at the present day the use of the handloom persists in the silk trade, thus demonstrating the continued vitality of this ancient method of work.¹

In the case of the Nottingham frame-work knitters the domestic system was fully established early in the eighteenth century, and by 1750 there were some fifty large manufacturers or "putters out" whose work furnished occupation for twelve hundred frames.² The knitting frame introduced in 1589 by William Lee³ was the earliest substitute for hand-knitting with needles, and from this invention a large industry had sprung up. The peculiar feature of the manufacture was that the frames were hired out to the domestic workers, and were generally the property of the employers.⁴ In 1782 there were 20,000 frames in use in the United Kingdom, in 1812 nearly 30,000; and in 1844 about 43,000 frames were at work, a number which was not exceeded during the next generation. A few factories driven by power were established from about 1816, but it was not until 1845 that the new system assumed important dimensions, and even in 1860 the number of power-driven frames in factories was only about 3,000. In fact, the older hand system persisted on a large scale long after this date, though it gradually lost a good deal of its domestic character, and by 1885, though it was still

¹ *Labour Gazette*, November, 1911.

² Felkin, "History of Hosiery and Lace Trade," 79-83.

³ This William Lee may possibly be identified with the youth of that name whose entrance into the University of Cambridge in 1573 was made possible by the generosity of the Sheffield Town Trust.

⁴ A practice afterwards prohibited by statute (37 and 38 Vict., c. 48).

common in the West of England as a domestic employment, the number of factory workers in the trade, including young people, amounted to nearly 20,000.¹ In 1892, though the trade gave occupation to some 30,000 persons in all, there were only about 5,000 domestic hand-frames still in use.² There were some little masters in the factory trade, but these were sub-contractors using power machinery.³

Looking broadly at the group of textile industries which in a pre-eminent sense deserve the name of factory industries, we see that the proportion of those employed who came under the purview of the Factory Acts in 1840 was 56·8 per cent. in England and Wales, 32·6 per cent. in Scotland, and only 2·2 per cent. in Ireland.⁴ In 1871 the textile workers employed in factories in England and Wales were probably about 70 per cent. of the total number working in these industries, though it is impossible to institute any close comparison, owing to the difference in the classifications adopted for the Census and the factory returns respectively.⁵

Generally speaking, we may say that the progress made by the power-loom was most rapid in the decade 1840 to 1850, except in the cotton industry, where the movement had been anticipated in the previous decade. Incidentally, it is worthy of note that the epoch of advancing technique coincides with that of

¹ "Rates of Wages, Minor Textiles," P.P. C. 6161 of 1890, p. xxi.

² Labour Commission, Group C, Qu. 12865, 13327. Their number is now somewhat less.

³ *Ib.*, Qu. 12965-72.

⁴ Porter, "Progress," 78.

⁵ See tables given in Bevan, "Industrial Classes and Industrial Statistics," 1877.

acutest industrial suffering. The following figures will serve to summarize the movement : ¹

NUMBER OF POWER LOOMS EMPLOYED.

| | | | | | | Thousands. | |
|----------|-----|-----|-----|-----|-----|------------|-------|
| | | | | | | 1836. | 1856. |
| Cotton | ... | ... | ... | ... | ... | 109 | 299 |
| Woollen | ... | ... | ... | ... | ... | 2 | 14 |
| Worsted | ... | ... | ... | ... | ... | 3 | 39 |
| Silk ... | ... | ... | ... | ... | ... | 1·7 | 9 |
| Flax ... | ... | ... | ... | ... | ... | ·2 | 7·7 |

LEATHER.

In the manufacture of boots and shoes the transition from domestic to factory organization dates from the third quarter of the nineteenth century. In 1850, though the industry was organized on a large scale in the towns and villages of Northamptonshire and Staffordshire, it was still on a domestic basis, affording employment to large numbers of women as well as men, and machinery was but little used. The three main divisions were the preparation or "closing" of the uppers, part of which was done by women ; the "making," or attaching of soles to uppers ; and the binding, the last involving a large amount of needlework, performed by women. A closing machine was introduced in 1857, and from this time the trend to the factories was marked.² By 1890 the factory union of boot and shoe operatives had 45,000 members, and the production of a good pair of boots involved about ten distinct processes. About this time a further mechanical advance was registered by the

¹ McCulloch, "Essays," 451.

² "Trade Societies and Strikes," Social Science Association, 1860, p. 1.

introduction of American machinery for riveting instead of stitching the boots.¹

Among other trades in which factory methods and organization were even longer postponed may be instanced glove-making, rope-making, straw-plaiting (an occupation which in 1875 gave occupation to some 60,000 persons, mainly the families of agricultural labourers), and watch-making.²

THE FACTORY SYSTEM ABROAD.

If the transition to the factory system in Britain was tardy, except in the major textiles, it was much more belated in other European countries. The French and Prussian Census returns of 1866 and 1867 respectively clearly manifest the continued predominance of small industry, as the following figures will show :³

FRANCE : MALES OCCUPIED IN INDUSTRIAL PURSUITS, 1866.

| | | | |
|---|-----|-----|-----------------|
| Employers, masters, and active members of firms | ... | ... | 1,661,000 |
| Employees, managers, engineers, clerks, jobmen | ... | ... | 116,000 |
| Workmen | .. | ... | 2,938,000 |
| | | | <hr/> 4,715,000 |

Here we see that the number of employers is more than one-third of the total and the average size of the business unit consequently insignificant.

PRUSSIAN MONARCHY : MALES OCCUPIED, 1867.

| | | | | | | | |
|-----------|--------------------------------|-----|-----|-----|-----|-----|---------|
| | <i>In Mine and Iron Works.</i> | | | | | | |
| Employers | ... | ... | ... | ... | ... | ... | 7,443 |
| Workmen | .. | ... | ... | ... | ... | ... | 188,232 |

¹ Labour Commission, Group C, Qu. 15955, etc.

² *Ib.*, Qu. 15217.

³ Consular Reports, "Conditions of Industrial Classes in Foreign Countries," 1870.

In Manufactures and Trades.

| | | | | | | |
|---------------------------------|-----|-----|-----|-----|-----|-----------|
| Employers and manufacturers ... | ... | ... | ... | ... | ... | 765,609 |
| Workmen | ... | ... | ... | ... | ... | 1,026,544 |

✓ In the first group we have the beginnings of large-scale industry, but in the other manufactures the masters are 43 per cent. of the total.

In Germany in 1882 one half of all workers in manufactures were employed in establishments numbering less than five workers, and there were 754,000 persons employed in domestic industries, including 42 per cent. of all textile workers.¹ In the silk industry of Crefeld in particular there were still in 1885 twenty domestic handlooms employed to one powerloom.² In the woollen and worsted industry, however, the powerloom was beginning to vanquish the handloom. In 1875 the handlooms had been 47,000, as against 30,500 power-looms. In 1895 the power-looms numbered 77,000 and the handlooms only 23,000. At this latter date large industry had absorbed four-fifths of the wool and worsted spinning and two-thirds of the weaving, but nearly a fifth of the weavers were still domestic workers.³ In France handloom weaving still survives in the linen districts, though it is dying out in fine cloth and in silkweaving. In the silk industry of Lyons there were, in 1884, only 20,000 Jacquard handlooms in use, as compared with 40,000 ten years earlier.⁴ In other trades, such as the S. Étienne ribbon trade and in the hosiery trade of Troyes, the provision of petrol or electric motors for

¹ Schoenhof, "Economy of High Wages," 156.

² *Ib.* 50.

³ Clapham, "Woollen and Worsted Industries," 242-3.

⁴ Royal Commission on Depression of Trade, 2nd Report, Part II, p. 128.

driving the domestic looms has given a new lease of life to the dispersed form of industry.¹ The development of factory industry in France may be judged from the fact that in 1840 the total capacity of steam engines employed amounted to only 60,000 h.p., whereas before the end of the century this had been multiplied one-hundredfold.²

In America the early development of the iron industry was hampered by restrictions imposed by British legislation. It is therefore not surprising that in 1780 most of the iron produced was still made directly from the ore in small primitive bloomeries, and that no iron was as yet rolled.³ Puddling was not generally introduced until the decade 1830-40, and until this time charcoal was used for smelting.⁴ Thus at a time when the use of charcoal had been entirely suspended in Great Britain it was still used exclusively in the iron furnaces of America. The turning-point was reached about the middle of the century, and in 1860 the output of iron made from anthracite coal was twice as great as that manufactured with charcoal.⁵

In the textile trades the factory system had obtained a foothold by 1812, but it was not until the period 1840-50 that the system of domestic production in general manufacturing began to be superseded by more modern methods.⁶ The boot and shoe industry

¹ Commission on the Textile Industry, see *Economic Journal*, September, 1907.

² G. de Molinari, *Journal des Économistes*, January, 1901.

³ Swank, "Iron and Steel Production," Tenth Census.

⁴ S. D. North, Twelfth Census, vol. vii.

⁵ J. Russell Smith, "The Story of Iron and Steel," 50.

⁶ *Ib.*

—to take a specific example—which had been in the simplest handicraft stage at the end of the eighteenth century, was, until the third quarter of the nineteenth century, conducted in small domestic workshops, either attached to or built near the dwellings of the shoemakers, in which a few men worked up the stock received from the manufacturer.¹

Our survey thus points incontestably to the conclusion that the great alteration in industrial form which we describe specifically as the Industrial Revolution must be regarded as a product of the nineteenth century, and that the transformation of the cutlery trades from a domestic to a factory basis is thus by no means so belated as a hasty review of present conditions would suggest.

¹ Twelfth Census, U.S.A., "A Century of Population Growth"; Tenth Census, Carroll D. Wright, "Factory System of U.S."

APPENDIXES

APPENDIX I

NOTE ON THE SURVIVAL OF SMALL-SCALE INDUSTRY

THE factory system is so generally accepted nowadays as the normal type of industry that there is a tendency to overrate the extent to which it actually obtains. That industrial employment under the more primitive forms is still very considerable in the manufacturing countries of Europe is beyond question, and in the less progressive countries it is probable that small industry still employs a larger total population than the more prominent factory system. In the older industrial nations, on the other hand, these proportions are of course reversed.

THE UNITED KINGDOM.

For the United Kingdom we have no means of measuring, with any approach to accuracy, the extent of the employment afforded by small-scale industries. The returns of the Chief Inspector of Factories for the year 1904 give the number of persons employed in workshops in the United Kingdom as 653,912, and the number engaged in laundries as 104,477. Including workshops for which no returns are made, the total number of persons employed in workshops is estimated at about a million and a quarter persons.¹ In comparison with the number returned as occupied in factories—more than four millions in all—even this total appears small, but the returns in question give no reliable indication of the real extent of small-scale enterprise. A rough comparison may be made between the employment figures of the United Kingdom, derived from the Census returns of 1901, and the above-mentioned factory

¹ Home Office Committee on Workmen's Compensation, Cd. 2,208 (1904), p. 119.

returns for 1904. For this purpose certain broad and well-defined classes of employment may be selected, without, however, assuming that the basis of compilation makes them accurately comparable.

OCCUPATION RETURNS FOR THE UNITED KINGDOM.¹

| | | | | | CENSUS. | FACTORY RETURNS. |
|-------------------------------------|-----|-----|-----|-----|-----------|------------------|
| | | | | | 1901. | 1904. |
| Metals, machines, and implements | ... | | | | 1,475,000 | 1,238,000 |
| Textile fabrics | ... | ... | ... | ... | 1,462,000 | 1,026,000 |
| Clothing | ... | ... | ... | ... | 1,396,000 | 307,000 |
| Food, tobacco, etc. | ... | ... | ... | ... | 1,301,000 | 293,000 |
| Paper, books, stationery, etc. | ... | ... | ... | ... | 334,000 | 266,000 |
| Wood, furniture, etc. | ... | ... | ... | ... | 308,000 | 206,000 |
| Chemicals | ... | ... | ... | ... | 150,000 | 113,000 |
| Precious metals, jewellery, etc.... | ... | | | | 168,000 | 67,000 |
| | | | | | 6,594,000 | 3,516,000 |

This comparison, unreliable as it admittedly must be, does at all events serve to indicate the existence of a very large volume of employment beyond the purview of the Factory Acts, which must be accounted for in large measure by workers engaged in small workshops, domestic and otherwise. To any sociological investigator the small average size of industrial establishments is an arresting fact. In the majority of trades the number of persons employed per establishment commonly falls below twenty. Further, in trades suitable for small-scale operations there are found to be about as many individuals who work on their own account as there are of those who employ others. The immense number of small undertakings, apart from the railways, docks, and gasworks, and the great industries in which mechanical production has been highly perfected, is still the outstanding feature of modern industrialism. The experience of London in particular affords practical proof of the persistent vitality of small methods of business.²

The most prominent examples of trades in which home-work is common are the various branches of the clothing industry—hand-weaving, knitting of hosiery, tailoring, dressmaking, millinery, bespoke boot-making, and so on; other instances are found in numerous trades which require little or no mechanical equipment, such as the manufacture of cardboard boxes, artificial flower-making, the chain and nail industry, and many others. It is a significant fact that many of these are cases in which “sweating” is notoriously prevalent, and the group includes all those industries which, under recent legisla-

¹ Census of 1901: General Report, 270; Factory Returns from Abstract of Labour Statistics.

² See, for example, Booth, “Life and Labour in London: Industry,” v. 56, 70.

tion, have been scheduled for regulation by special wage-boards. The cutlery industry presents perhaps the best example of the persistence of the older forms, and in this instance the ancient organization manifests a continued vigour, although its vitality is now sadly impaired.

A return of the number of out-workers employed, in 1912, in trades scheduled under the Factory and Workshops Act of 1901 shows a total of 92,146 such out-workers in Great Britain, and it is admitted that the returns even in these cases are incomplete. The principal trades which provide employment of this kind are those connected with wearing apparel, in which 72,000 of the whole number are occupied.¹

THE GERMAN EMPIRE.

The following table, derived from the German Census, gives a clear idea of the prevalence of small-scale industry in that country. The figures relate solely to industrial occupations, and exclude employment in trade and transportation.²

| | Establishments with one Worker. | | Establishments with two to five Workers. | | Totals. | |
|--|---------------------------------|-----------|--|-----------|-----------|-----------|
| | 1882. | 1895. | 1882. | 1895. | 1882. | 1895. |
| No. of establishments ... | 1,496,755 | 1,308,846 | 679,102 | 680,726 | 2,175,857 | 1,989,572 |
| Percentage of all establishments ... | 66 | 61 | 30 | 32 | 96 | 93 |
| No. of workers ... | 1,496,755 | 1,308,846 | 1,773,649 | 1,882,279 | 3,270,404 | 3,191,125 |
| Percentage of all workers in industrial establishments | 25·2 | 16·4 | 30 | 23·5 | 55·2 | 39·9 |

In the kingdom of Prussia alone the comparison may be extended to the years 1895 and 1907 :

| | Establishments with one Worker. | | Establishments with two to five Workers. | | Totals. | |
|--|---------------------------------|---------|--|-----------|-----------|-----------|
| | 1895. | 1907. | 1895. | 1907. | 1895. | 1907. |
| No. of establishments ... | 707,609 | 569,182 | 375,725 | 433,461 | 1,083,334 | 1,002,643 |
| Percentage of all establishments ... | 59·08 | 50·42 | 34·05 | 40·46 | 93·50 | 90·51 |
| No. of workers ... | 707,609 | 569,182 | 1,044,789 | 1,184,117 | 1,752,398 | 1,753,299 |
| Percentage of all workers in industrial establishments | 17·53 | 11·47 | 27·88 | 24·46 | 45·41 | 35·93 |

¹ National Health Insurance, Out-workers Committee, Cd. 6178 (1912).

² "Die Deutsche Volkswirtschaft am Schlusse des 19 Jahrhunderts" (Kaiserlichen Statistischen Amt, 1900), p. 91.

Thus it appears that in Germany, although the importance of this small-scale industry is declining, relatively to the factories, it nevertheless continues to employ about two-fifths of the entire industrial population, and embraces more than 90 per cent. of the industrial establishments.

BELGIUM.

In Belgium, again, there were in 1896 165,000 establishments with solitary workers, and 54,000 establishments employing from one to four assistants only. We find that no less than 94 per cent. of all establishments employed less than five workers.

DENMARK.

Similarly, in Denmark, in 1906, 79 per cent. of all establishments employed less than five workers.¹

UNITED STATES.

The United States presents a very different picture. Nowhere else does the factory prevail so generally; yet even here the more primitive forms are by no means entirely superseded, though the transformation has been more rapid and universal than in the older countries. A century ago the handicraft and domestic systems were almost universal in America. Factory production was practically unknown. Half a hundred hand trades were enumerated by Henry Clay in 1832; these then supplied a purely local demand, but are now all under complete factory organization. As late as 1869 it was stated by General J. A. Walker that the value of the products of hand labour was greater far than those of the factory trades.² Since then, however, the development of large industry has been exceedingly rapid.

The United States Census returns throw some light upon the relation of small to large establishments in that country at the present time by giving information as to the employment of power, the value of products, and the number of workers per establishment. The result is to enforce the conclusion that, though declining in relative importance, the small establishment is holding its own in numbers, and is even encouraged by the requirements of the larger establishments. Thus, with regard to power, though there is a very rapid increase in the average horse-power employed per establishment, yet the proportionate number of establishments reporting no

¹ "Handwörterbuch der Staatswissenschaft" (3rd edit.), Art. "Fabrik," p. 9.

² *Atlantic Monthly*, 1869, p. 689. See Twelfth Census, vol. vii. xxxv *seq.*

power remained stationary between 1880 and 1900, being 66·2 per cent. and 66·9 per cent. respectively of the total establishments.¹ The returns for 1905 show a further increase of 2·1 per cent. of such establishments.² Moreover, the increase of hand labour shops, and of small factories using some machinery but no power, has been continuous. Measured by the number of workers per establishment we find that there were in 1900 110,509 establishments with a solitary worker, and 232,716 employing less than five workers out of a total of 512,191 establishments enumerated; of these numbers 68,823 and 106,836 respectively were places where hand trades were carried on. The total number of hand-trade establishments amounted to 42·1 per cent. of all establishments; these, however, employed only 559,130 persons, or 10·5 per cent. of the total wage-earners, and their product was only 9·1 per cent. of the total for all establishments. These figures are small; but it must be noted that no hand workers were enumerated other than those working in a shop. Home workers were definitely excluded, and the comparison of the occupation census with that of the census of manufactures shows that in many instances by far the larger proportion of workers in small trades were omitted. Thus the above figures can by no means be regarded as indicating the full extent of small industries in the United States.

The returns for 1905 adopted a very different classification, and ignored the returns of 215,814 hand trades and other small industries.³ Even so, 44·3 per cent. of the establishments investigated employed less than five wage-earners (including 9·1 per cent. in which only the proprietor was occupied), while 32·9 per cent. of the total each had an annual product of less than \$5,000.⁴ The same broad conclusion is enforced by the results of the 1910 Census. No less than 61 per cent. of all establishments reported employed less than six wage-earners per establishment.⁵

The above evidence bears out the contention that the proportion of small industry in modern communities, though everywhere showing relative diminution, is still very considerable. Nevertheless, the small trades of to-day are governed by market conditions widely different from those of earlier times, and their products are subject to standardization and specialization to an extent formerly unknown. Such industries, for example, as those concerned with the production of hand-made jewellery, hosiery, bread, confectionery, tinsmiths'

¹ Twelfth Census, 1900, vol. ii. cccxvii.

² *Ib.*, Manufactures, Part I, 1905, ccxx.

³ *Ib.*, p. liv.

⁴ *Ib.*, chap. vii.

⁵ Thirteenth Census, 1910: Abstract, p. 468.

and saddlers' work and so on, usually produce articles which conform to standard requirements; thus their products as a rule are characterized by a uniformity of type and design which is hardly less monotonous than is the case with machine-made articles; they do not present that wide range of individual variation which is characteristic of the ancient handicrafts and is still to be found where custom production obtains. The vitality of these small industries is, indeed, largely due under modern conditions to the demands of the factory trades for subsidiary articles of a special character required in small quantities; and this influence is likely in the future to maintain or increase the number of those finding employment in such occupations, even while the total may be constantly diminishing relatively to the whole numbers of workers.

APPENDIX II

STEEL MAKING IN SHEFFIELD IN THE SIXTEENTH CENTURY

EXTRACTS FROM MS. MEMORANDUM BOOK KEPT BY WILLIAM
DECKENSON, STEWARD TO THE EARL OF SHREWSBURY AT
SHEFFIELD CASTLE, 1574-5.¹

A note of Iearn stuffe belonging to the blom Smithyes deliveryd
to Arter barker the last day of August 1574. P. 4

fyrst ii pere of Lowes
item ii tuernes (? buernes) ;² ii iii blome axes ;
iii hamers ; iii hankes ; ii tredyl pynes ;
ii chylers³ and a lome ;⁴ one yea chyler.
ii blome showles ; a pytfole staffe.⁵
For the smithe axes ii on lome ;
ii tewyrans ;⁶ ii hammers ; one croke ;⁷ ii hancks ;
on stethie iii chellers.

Stone gotten within the offyce of Henrie Bromeheade. John P. 10
Lansdale hath gotten viii loodes gryndestones in Boughe Edge in
Lockersley Xs. viii^d.
Willm Creswicke hath gotten xi loodes gryndestones ... xiiii^s viii^d.

¹ Sheffield Free Library.

² Tuernes : *i.e.* tewers, air-vents into the furnace, may also be read

“buernes” : *i.e.* burns, or branding irons.

³ Chylers : *i.e.* chillers, probably vessels for quenching. Eye chiller.

⁴ Lome : a pot.

⁵ Pytfole staffe : a pitfall staff.

⁶ Tewyrans : *i.e.* tewel irons, the pipe in the forge or furnace which receives
the nozzle of the bellows.

⁷ Croke : an iron pot.

p. 11 Stone gotten within the office of Willm Bradheade. Johne Twyg
hathe gotten ix gryndestones vis.

p. 21 Mem. that Arther Barker had at one tyme L gades ¹ of steele
more than was righte and then he wanted another tyme xii.

p. 22
L burden
cont. one
Barrell

Rec. from Bowetry the viiith of October 1574 vi Barrells of steele
wch was layd in the stawre howse at Sheffield Castle. Whereof
Dd to Arther barker iii burden of steele, every burden contaying in
gades IX^{xx} at . . . the burden.

Item deliveryd to ye said Arther Barker the IX daie of November
other vi Burden of Steele.

Deliveryd to Homffrey Perins the xxiiiith of November 1574
iiii Barrells of Steele.

Delyveryd Arther Barker boye called Awwen the seconde daye of
December 1574 xii burden of steele.

Item Dd to Arther barker boye called Awen the xxiith of
Februariye 1574 vi burden steele.

Itm Dd to Arther Barker by Johne bawth the xiiiith of Maye
1575 X burden of steel.

Itm Dd in Steele to mend the mylne pyckes ² for Sheffield Mylnes,
pound mylne, Whyston Mylne and Attercliffe Mylne the xvth of
Auguste 1575 LX gades.

Itm Delyveryd the xviiiith of Octobr 1575 to Arther Barker xii
burden steele.

p. 37 Nailes made of Parker of vii ff prices for an example :

1. xx*d*. the hundred.
 2. x*d*. the hundred.
 3. viii*d*. the hundred.
 4. vi*d*. the hundred.
 5. iiiii*d*. the hundred.
 6. iii*d*. the hundred.
 7. ii*d*. the hundred.
-

p. 49 For yron Stone gaytting—Instructions thereof gyven by Johne
humblocke the xxiiiith of Octobr 1574.

to paye

at ye toppe xs. ; at Smelt xs. ; at tuste vis. viii*d*.

¹ Gade or gad : a small bar of metal.

² Mylne pycke : millstone hammer, a tool for dressing the surface of the
grindstone.

xv Byrdens of Stone being one Loode and ye fourte parte of a Dozen will make one blowme of yron.

One Dosen of Coales wyll laye the raythe and blowe the blowme and burne yt.

the blowmer wages for one blowme ys viiid.

the stringefellowe wages for layeing ye stane, and breakeinge and feyinge¹ of Synder, and breakinge of the blowme, and heweinge at the one side of the burnes ys viiid.

the Smyth wages for burninge ys viiid.

and for breakeing of the one syde iid.

yt is better to allowe the stringefellowe for his crapes² than to suffer him to sell them . . . a mark as xxs. a yere.

the blowmer is accustomed to have a cowe kept wynter and sommer and xs. for his coste.

the smith lykeways.

the horsedryver was accustomed to have iis. a weke, was to buy him a pair of bowtes; and a cowe kept both wynter and sommer.

Fish received. iii gades of full herring ; ii gades of sprottes ; one Barrell of salte salmon. p. 65

Smethie gayre³ Dd to Fraunces Smithe for to goo to Stretton Smethies the vith of Januarye 1575. p. 70

iiii axes.

a hammer for the smithe.

a smithe Lowme.

a smithe croke.

a blome chiller for ye blowmer.

a brode Iron Shovell for ye blowmer.

an eye chiller for ye Smith.

¹ Feyinge : clearing away.

² Crapes : scraps.

³ Gayre : gear.

APPENDIX III

CENSUS STATISTICS RELATING TO EMPLOYMENT IN THE CUTLERY AND ALLIED TRADES

NOTE.—In the following tables the figures in heavier type are derived from the Census returns by compilation or calculation. All others are directly abstracted from the official reports.

TABLE I.—CUTLERY.

NUMBERS ENGAGED IN THE MANUFACTURE OF STEEL CUTLERY, INCLUDING KNIVES, FORKS, RAZORS, SCISSORS, SHEARS, SICKLES, AND SCYTHES.

A. ENGLAND AND WALES.

Total Number Occupied—All Ages.

| Year. | Males. | Females. | Total. |
|-------|---------------------|------------------|---------------------|
| 1841 | 16,181 | 429 | 16,610 |
| 1851 | 17,560 ¹ | 675 ¹ | 18,235 ¹ |
| 1861 | 18,192 | 874 | 19,066 |
| 1871 | 18,131 | 1,213 | 19,344 |
| 1881 | 16,651 | 1,583 | 18,234 |
| 1891 | 17,734 | 2,258 | 19,992 |
| 1901 | 15,226 | 2,527 | 17,753 |

Age Distribution—Males.

| Year. | Under 20 Years. | Per Cent. of all Males. | 45 Years and Over. | Per Cent. of all Males. |
|-------|--------------------|-------------------------|--------------------|-------------------------|
| 1841 | 2,999 | 18·7 | — | — |
| 1851 | 3,947 ¹ | 22·4 | 3,792 ¹ | 21·7 |
| 1861 | 4,064 | 22·4 | 3,996 | 22·0 |
| 1871 | 3,510 | 19·4 | 4,694 | 25·8 |
| 1881 | 2,978 | 17·9 | 4,354 | 26·2 |
| 1891 | 3,364 | 19·0 | 4,720 | 26·7 |
| 1901 | 2,342 | 15·4 | 4,647 | 30·4 |

¹ Great Britain.

Females.

| Year. | Under 20 Years. | Per Cent. of all Females. | 45 Years and Over. | Per Cent. of all Females. |
|-------|------------------|---------------------------|--------------------|---------------------------|
| 1841 | 114 | 25·7 ✓ | — | — |
| 1851 | 231 ¹ | 34·2 | — | — |
| 1861 | 328 | 37·5 | 111 | 12·7 |
| 1871 | 485 | 40·0 | 159 | 13·1 |
| 1881 | 630 | 39·6 | 188 | 11·8 |
| 1891 | 1,074 | 47·0 | 233 | 10·2 |
| 1901 | 1,250 | 49·5 ✓ | 208 | 8·3 |

B. SHEFFIELD.*Total Number Occupied—All Ages.*

| Year. | Males. | Females. | Total. |
|-------|--------|----------|--------|
| 1841 | 9,686 | 293 | 9,979 |
| 1851 | 10,400 | — | — |
| 1861 | 13,839 | 765 | 14,604 |
| 1871 | 14,027 | 1,082 | 15,109 |
| 1881 | 13,823 | 1,467 | 15,290 |
| 1891 | 14,294 | 2,061 | 16,355 |
| 1901 | 12,013 | 2,423 | 14,436 |

C. LONDON.*Total Number Occupied—All Ages.*

| Year. | Males. | Females. | Total. |
|-------|--------|----------|--------|
| 1841 | 1,003 | 58 | 1,061 |
| 1851 | 1,342 | — | — |
| 1861 | 753 | 34 | 787 |
| 1871 | 631 | 39 | 670 |
| 1881 | 450 | 18 | 468 |
| 1891 | 481 | 32 | 513 |
| 1901 | 430 | 13 | 443 |

D. BIRMINGHAM.*Total Number Occupied—All Ages.*

| Year. | Males. | Females. | Total. |
|-------|--------|----------|--------|
| 1841 | 262 | 7 | 269 |
| 1851 | 298 | — | — |
| 1861 | 172 | 4 | 176 |
| 1871 | 223 | 4 | 227 |
| 1881 | 42 | 10 | 52 |
| 1891 | 43 | 34 | 77 |
| 1901 | 67 | 14 | 81 |

¹ Great Britain.

TABLE II.—FILES.

NUMBERS OCCUPIED IN THE MANUFACTURE OF FILES.

A. ENGLAND AND WALES.

Total Number Occupied—All Ages.

| Year. | Males. | Females. | Total. |
|-------|--------------------|------------------|--------------------|
| 1841 | 4,144 | 123 | 4,267 |
| 1851 | 6,013 ¹ | 311 ¹ | 6,324 ¹ |
| 1861 | 7,646 | 667 | 8,313 |
| 1871 | 7,980 | 1,021 | 9,001 |
| 1881 | 7,761 | 1,206 | 8,967 |
| 1891 | 7,603 | 1,646 | 9,249 |
| 1901 | 6,450 | 1,718 | 8,168 |

Age Distribution—Males.

| Year. | Under 20 Years. | Per Cent. of all Males. | 45 Years and Over. | Per Cent. of all Males. |
|-------|--------------------|-------------------------|--------------------|-------------------------|
| 1841 | 1,043 | 25·3 | — | — |
| 1851 | 1,613 ¹ | 26·8 | 916 ¹ | 15·2 |
| 1861 | 2,110 | 27·5 | 1,223 | 16·0 |
| 1871 | 1,775 | 22·2 | 1,592 | 20·0 |
| 1881 | 1,341 | 17·3 | 1,692 | 21·8 |
| 1891 | 1,577 | 20·7 | 1,880 | 24·7 |
| 1901 | 1,176 | 18·2 | 1,896 | 29·4 |

Females.

| Year. | Under 20 Years. | Per Cent. of all Females. | 45 Years and Over. | Per Cent. of all Females. |
|-------|-----------------|---------------------------|--------------------|---------------------------|
| 1841 | 31 | 25·0 | — | — |
| 1851 | 94 ¹ | 30·3 | — | — |
| 1861 | 245 | 36·9 | 47 | 7·1 |
| 1871 | 190 | 18·5 | 114 | 11·1 |
| 1881 | 322 | 25·6 | 143 | 11·3 |
| 1891 | 638 | 38·7 | 221 | 12·4 |
| 1901 | 685 | 40·0 | 243 | 14·2 |

¹ Great Britain.

B. SHEFFIELD.*Total Number Occupied—All Ages.*

| Year. | Males. | Females. | Total. |
|-------|--------|----------|--------|
| 1841 | 2,218 | 106 | 2,324 |
| 1851 | 3,343 | — | — |
| 1861 | 4,345 | 589 | 4,934 |
| 1871 | 4,685 | 882 | 5,567 |
| 1881 | 4,512 | 1,029 | 5,531 |
| 1891 | 4,509 | 1,362 | 5,871 |
| 1901 | 3,867 | 1,399 | 5,266 |

C. LANCASHIRE.*Total Number Occupied—All Ages.*

| Year. | Males. | Females. | Total. |
|-------|--------|----------|--------|
| 1841 | 542 | 4 | 546 |
| 1851 | 781 | — | — |
| 1861 | 1,062 | 16 | 1,078 |
| 1871 | 1,069 | 29 | 1,098 |
| 1881 | 1,016 | 26 | 1,042 |
| 1891 | 883 | 41 | 924 |
| 1901 | 715 | 52 | 767 |

D. STAFFORDSHIRE.*Total Number Occupied—All Ages.*

| Year. | Males. | Females. | Total. |
|-------|--------|----------|--------|
| 1841 | 203 | 4 | 207 |
| 1851 | 278 | — | — |
| 1861 | 275 | 3 | 278 |
| 1871 | 334 | 17 | 351 |
| 1881 | 358 | 9 | 367 |
| 1891 | 430 | 15 | 445 |
| 1901 | 340 | 16 | 356 |

TABLE III.—SAWS.

NUMBERS OCCUPIED IN THE MANUFACTURE OF SAWS.

A. ENGLAND AND WALES.

Total Number Occupied—All Ages.

| Year. | Males. | Females. | Total. |
|-------|--------------------|-----------------|--------------------|
| 1841 | 795 | 24 | 819 |
| 1851 | 1,249 ¹ | 57 ¹ | 1,306 ¹ |
| 1861 | 1,968 | 71 | 2,039 |
| 1871 | 1,930 | 28 | 1,958 |
| 1881 | 2,016 | 100 | 2,116 |
| 1891 | 2,007 | 126 | 2,133 |
| 1901 | 2,297 | 155 | 2,452 |

Age Distribution—Males.

| Year. | Under 20 Years. | Per Cent. of all Males. | 45 Years and Over. | Per Cent. of all Males. |
|-------|------------------|-------------------------|--------------------|-------------------------|
| 1841 | 172 | 24·0 | — | — |
| 1851 | 312 ¹ | 24·9 | 219 ¹ | 17·5 |
| 1861 | 325 | 16·4 | 439 | 22·1 |
| 1871 | 283 | 14·7 | 539 | 28·0 |
| 1881 | 274 | 13·5 | 638 | 31·6 |
| 1891 | 308 | 15·3 | 685 | 34·1 |
| 1901 | 370 | 16·1 | 785 | 34·2 |

B. SHEFFIELD.

Total Number Occupied—All Ages.

| Year. | Males. | Females. | Total. |
|-------|--------|----------|--------|
| 1841 | 629 | 23 | 652 |
| 1851 | — | — | — |
| 1861 | 1,232 | — | — |
| 1871 | 1,180 | — | — |
| 1881 | 1,151 | 86 | 1,237 |
| 1891 | 1,062 | 107 | 1,169 |
| 1901 | 1,048 | 125 | 1,173 |

¹ Great Britain.

C. LONDON.*Total Number Occupied—All Ages.*

| Year. | Males. | Females. | Total. |
|-------|--------|----------|--------|
| 1841 | — | — | — |
| 1851 | — | — | — |
| 1861 | 210 | — | — |
| 1871 | 206 | — | — |
| 1881 | 245 | 8 | 253 |
| 1891 | 205 | 7 | 212 |
| 1901 | 225 | 8 | 233 |

D. LANCASHIRE.*Total Number Occupied—All Ages.*

| Year. | Males. | Females. | Total. |
|-------|--------|----------|--------|
| 1841 | 39 | — | — |
| 1851 | — | — | — |
| 1861 | 84 | — | — |
| 1871 | 147 | — | — |
| 1881 | 146 | — | — |
| 1891 | 162 | 2 | 168 |
| 1901 | 235 | — | — |

TABLE IV.—TOOLS.

**NUMBERS OCCUPIED IN THE MANUFACTURE OF TOOLS, NOT INCLUDING
AGRICULTURAL IMPLEMENTS.**

A. ENGLAND AND WALES.*Total Number Occupied—All Ages.*

| Year. | Males. | Females. | Total. |
|-------|--------------------|-----------------|--------------------|
| 1841 | 4,661 | 78 | 4,739 |
| 1851 | 4,652 ¹ | 45 ¹ | 4,697 ¹ |
| 1861 | 6,308 | 80 | 6,388 |
| 1871 | 7,453 | 174 | 7,627 |
| 1881 | 9,162 | 191 | 9,353 |
| 1891 | 11,992 | 266 | 12,258 |
| 1901 | 16,395 | 481 | 16,876 |

¹ Great Britain.

APPENDIXES

Age Distribution—Males.

| Year. | Under 20 Years. | Per Cent. of all Males. | 45 Years and Over. | Per Cent. of all Males |
|-------|------------------|-------------------------|--------------------|------------------------|
| 1841 | 815 | 17·5 | — | — |
| 1851 | 955 ¹ | 20·5 | 966 ¹ | 20·7 |
| 1861 | 1,284 | 20·3 | 1,251 | 19·8 |
| 1871 | 1,336 | 17·9 | 1,711 | 23·0 |
| 1881 | 1,401 | 15·3 | 2,224 | 24·2 |
| 1891 | 2,204 | 18·4 | 2,728 | 22·7 |
| 1901 | 3,098 | 18·8 | 3,648 | 22·2 |

B. SHEFFIELD.*Total Number Occupied—All Ages.*

| Year. | Males. | Females. | Total. |
|-------|--------|----------|--------|
| 1841 | 704 | 10 | 714 |
| 1851 | 1,080 | — | — |
| 1861 | 1,408 | — | — |
| 1871 | 1,622 | 70 | 1,692 |
| 1881 | 2,067 | 71 | 2,138 |
| 1891 | 2,241 | 107 | 2,348 |
| 1901 | 2,833 | 227 | 3,060 |

C. BIRMINGHAM.*Total Number Occupied—All Ages.*

| Year. | Males. | Females. | Total. |
|-------|--------|----------|--------|
| 1841 | 434 | 4 | 438 |
| 1851 | 1,011 | — | — |
| 1861 | 1,089 | — | — |
| 1871 | 1,559 | 40 | 1,599 |
| 1881 | 1,746 | 29 | 1,775 |
| 1891 | 2,362 | 44 | 2,406 |
| 1901 | 3,195 | 96 | 3,291 |

¹ Great Britain.

D. STAFFORDSHIRE.

Total Number Occupied—All Ages.

| Year. | Males. | Females. | Total. |
|-------|--------|----------|--------|
| 1841 | 175 | 3 | 178 |
| 1851 | 399 | — | — |
| 1861 | 769 | — | — |
| 1871 | 1,166 | 16 | 1,182 |
| 1881 | 1,525 | 36 | 1,561 |
| 1891 | 1,665 | 38 | 1,703 |
| 1901 | 2,315 | 80 | 2,395 |

TABLE V.—SUMMARY.

TOTAL NUMBERS OCCUPIED IN THE MANUFACTURE OF CUTLERY, FILES, SAWS, AND TOOLS.

A. ENGLAND AND WALES.

Males.

| Year. | Cutlery. | Files. | Saws. | Tools. | Total. |
|-------|----------|--------|-------|--------|--------|
| 1841 | 16,181 | 4,144 | 795 | 4,661 | 25,781 |
| 1851 | 17,560 | 6,013 | 1,249 | 4,652 | 29,474 |
| 1861 | 18,192 | 7,646 | 1,968 | 6,308 | 34,114 |
| 1871 | 18,131 | 7,980 | 1,930 | 7,453 | 35,494 |
| 1881 | 16,651 | 7,761 | 2,016 | 9,162 | 35,590 |
| 1891 | 17,734 | 7,603 | 2,007 | 11,992 | 39,336 |
| 1901 | 15,226 | 6,450 | 2,297 | 16,395 | 40,368 |

Females.

| Year. | Cutlery. | Files. | Saws. | Tools. | Total. |
|-------|----------|--------|-------|--------|--------|
| 1841 | 429 | 123 | 24 | 78 | 654 |
| 1851 | 675 | 311 | 57 | 45 | 1,088 |
| 1861 | 874 | 667 | 71 | 80 | 1,692 |
| 1871 | 1,213 | 1,021 | 28 | 174 | 2,436 |
| 1881 | 1,583 | 1,206 | 100 | 191 | 3,080 |
| 1891 | 2,258 | 1,646 | 126 | 266 | 4,296 |
| 1901 | 2,527 | 1,718 | 155 | 481 | 4,881 |

APPENDIXES

Males and Females.

| Year. | Cutlery. | Files. | Saws. | Tools. | Total. |
|-------|----------|--------|-------|--------|--------|
| 1841 | 16,610 | 4,267 | 819 | 4,789 | 26,485 |
| 1851 | 18,235 | 6,824 | 1,306 | 4,697 | 30,562 |
| 1861 | 19,066 | 8,313 | 2,039 | 6,388 | 35,806 |
| 1871 | 19,344 | 9,001 | 1,958 | 7,627 | 37,930 |
| 1881 | 18,234 | 8,967 | 2,116 | 9,353 | 38,670 |
| 1891 | 19,992 | 9,249 | 2,133 | 12,258 | 43,632 |
| 1901 | 17,753 | 8,168 | 2,452 | 16,876 | 45,249 |

B. SHEFFIELD.*Males.*

| Year. | Cutlery. | Files. | Saws. | Tools. | Total. |
|-------|----------|--------|-------|--------|--------|
| 1841 | 9,686 | 2,218 | 629 | 704 | 13,237 |
| 1851 | 10,400 | 3,343 | — | 1,080 | — |
| 1861 | 13,339 | 4,345 | 1,232 | 1,408 | 20,324 |
| 1871 | 14,027 | 4,685 | 1,180 | 1,622 | 21,514 |
| 1881 | 13,823 | 4,512 | 1,151 | 2,067 | 21,553 |
| 1891 | 14,294 | 4,509 | 1,062 | 2,241 | 22,106 |
| 1901 | 12,013 | 3,867 | 1,048 | 2,833 | 19,761 |

Females.

| Year. | Cutlery. | Files. | Saws. | Tools. | Total. |
|-------|----------|--------|-------|--------|--------|
| 1841 | 293 | 106 | 23 | 10 | 432 |
| 1851 | — | — | — | — | — |
| 1861 | 765 | 589 | — | — | — |
| 1871 | 1,082 | 882 | — | 70 | — |
| 1881 | 1,467 | 1,029 | 86 | 71 | 2,653 |
| 1891 | 2,061 | 1,362 | 107 | 107 | 3,637 |
| 1901 | 2,423 | 1,399 | 125 | 227 | 4,174 |

Males and Females.

| Year. | Cutlery. | Files. | Saws. | Tools. | Total. |
|-------|----------|--------|-------|--------|--------|
| 1841 | 9,979 | 2,324 | 652 | 714 | 13,669 |
| 1851 | — | — | — | — | — |
| 1861 | 14,104 | 4,934 | — | — | — |
| 1871 | 15,109 | 5,567 | — | 1,692 | — |
| 1881 | 15,290 | 5,531 | 1,237 | 2,138 | 24,196 |
| 1891 | 16,355 | 5,871 | 1,169 | 2,348 | 25,743 |
| 1901 | 14,436 | 5,266 | 1,173 | 3,060 | 23,935 |

APPENDIX IV

WATER POWER EMPLOYED IN SHEFFIELD CUTLERY MANUFACTURE IN 1770, 1794, AND 1865

1770.

| | Wheels. | Troughs. | Rolling Mills, Tilts, and Forges. | Total Works. |
|----------------------------|------------|------------|---|--------------|
| R. Don | 26 | 202 | 21 | 47 |
| R. Loxley | 41 | 254 | 1 | 42 |
| R. Rivelin | 22 | 158 | 2 | 24 |
| Porter Dyke | 14 | 136 | 1 | 15 |
| R. Sheaf and other streams | 30 | 146 | 3 | 33 |
| Total | 133 | 896 | 28 | 161 |

1794.

| | Wheels. | Troughs. | Rolling Mills, Tilts, and Forges. | Total Works. |
|----------------------------|-----------|--------------|---|--------------|
| R. Don | 12 | 332 | 15 | 27 |
| R. Loxley | 31 | 342 | 5 | 36 |
| R. Rivelin | 19 | 142 | 3 | 22 |
| Porter Dyke | 14 | 162 | 4 | 18 |
| R. Sheaf and other streams | 7 | 117 | 8 | 15 |
| Steam-driven works ... | 3 | 320 | 2 | 5 |
| Total | 86 | 1,415 | 37 | 123 |

1865.

| | | | | | Grinding Wheels. |
|---------------------|-----|-----|-----|-----|------------------|
| R. Don | ... | ... | ... | ... | 2 |
| R. Loxley | ... | ... | ... | ... | 6 |
| R. Rivelin | ... | ... | ... | ... | 8 |
| R. Porter | ... | ... | ... | ... | 7 |
| R. Sheaf, etc. | ... | ... | ... | ... | 9 |
| Steam-driven wheels | ... | ... | ... | ... | 132 |
| Total | | | | | 164 |

APPENDIX V

EMPLOYMENT IN THE DIFFERENT BRANCHES OF THE SHEFFIELD CUTLERY TRADES IN 1824

NOTE.—“The returns were made by persons engaged in the respective branches, with great care, for official reference.”—*Sheffield Local Register*, May 1, 1824.

Table Knives—

| | | | | | | |
|--|-----|-----|-----|-----|-----|--------|
| Forgers and strikers occupying 200 hearths | ... | ... | ... | ... | ... | 400 |
| Hafters, men and boys | ... | ... | ... | ... | ... | 1,000 |
| Grinders | ... | ... | ... | ... | ... | 540 |
| Haft and scale cutters | ... | ... | ... | ... | ... | 160 |
| Pressers | ... | ... | ... | ... | ... | 140 |
| | | | | | | —2,240 |

Spring Knives—

| | | | | | | |
|------------------------|-----|-----|-----|-----|-----|--------|
| Blade forgers... | ... | ... | ... | ... | ... | 240 |
| Scale and spring ditto | ... | ... | ... | ... | ... | 120 |
| Hafters, men and boys | ... | ... | ... | ... | ... | 1,470 |
| Grinders | ... | ... | ... | ... | ... | 360 |
| | | | | | | —2,190 |

Razors—

| | | | | | | |
|----------------------------------|-----|-----|-----|-----|-----|------|
| Forgers and strikers, 40 hearths | ... | ... | ... | ... | ... | 80 |
| Hafters, men and boys | ... | ... | ... | ... | ... | 120 |
| Pressers | ... | ... | ... | ... | ... | 28 |
| Grinders | ... | ... | ... | ... | ... | 250 |
| | | | | | | —478 |

Scissors, including Lined Blades—

| | | | | | | |
|-----------|-----|-----|-----|-----|-----|------|
| Forgers | ... | ... | ... | ... | ... | 147 |
| Filers... | ... | ... | ... | ... | ... | 196 |
| Dressers | ... | ... | ... | ... | ... | 110 |
| Grinders | ... | ... | ... | ... | ... | 238 |
| Finishers | ... | ... | ... | ... | ... | 115 |
| | | | | | | —806 |

Files—

| | |
|--|-------------|
| Forgers and strikers, one quarter double hearths ... | 238 |
| Grinders | 133 |
| Cutters | 795 |
| Hardeners | 118 |
| | <hr/> 1,284 |

Saws—

| | |
|------------------------|-----|
| Makers and grinders... | 400 |
|------------------------|-----|

Edge Tools—

| | |
|-----------------------------|-----------|
| Forgers and strikers | 401 |
| Grinders | 140 |
| | <hr/> 541 |

Forks—

| | |
|-----------------|-----------|
| Forgers | 280 |
| Grinders | 200 |
| | <hr/> 480 |

| | |
|--------------------------------|-------------|
| Total Sheffield | 8,419 |
| Additional for country workers | 130 |
| | <hr/> 8,549 |
| | <hr/> |

APPENDIX VI

EMPLOYMENT IN THE SHEFFIELD CUTLERY TRADES IN 1833¹

| | | | | | |
|------------------------|-----|-----|-----|-----|--------|
| Table knives and forks | ... | ... | ... | ... | 3,689 |
| Pen and pocket knives | ... | ... | ... | ... | 2,680 |
| Razors | ... | ... | ... | ... | 754 |
| Scissors | ... | ... | ... | ... | 600 |
| Files | ... | ... | ... | ... | 1,768 |
| Saws | ... | ... | ... | ... | 563 |
| Shears, scythes, etc. | ... | ... | ... | ... | 703 |
| | | | | | <hr/> |
| | | | | | 10,757 |
| | | | | | <hr/> |

¹ House of Commons Select Committee on Commerce, 1833.

APPENDIX VII

CUTLERY FORGES AND WAREHOUSES IN SHEFFIELD IN 1846

Forgers' Hearths—

| | | | | | |
|-------------------------------------|-----|-----|-----|-----|-------|
| Table-knife hearths | ... | ... | ... | ... | 346 |
| Pen and pocket knife hearths | ... | ... | ... | ... | 270 |
| Scale and spring forgers' hearths | ... | ... | ... | ... | 270 |
| Razor hearths | ... | ... | ... | ... | 72 |
| Scissors-makers' hearths | ... | ... | ... | ... | 170 |
| Lancet and fleam makers' hearths | ... | ... | ... | ... | 17 |
| Fork and steel makers' hearths | ... | ... | ... | ... | 70 |
| Ditto, country workers | ... | ... | ... | ... | 60 |
| Sheep-shear makers' hearths | ... | ... | ... | ... | 50 |
| File-forgers' hearths | ... | ... | ... | ... | 575 |
| Saw-makers' hearths | ... | ... | ... | ... | 300 |
| Garden shear makers' hearths | ... | ... | ... | ... | 10 |
| Brace-bit and joiners'-tool hearths | ... | ... | ... | ... | 25 |
| Other edge-tool makers' hearths | ... | ... | ... | ... | 300 |
| Total forgers' hearths | | | | | 2,535 |

Pressers' Furnaces—

| | | | | | |
|-------------------------------|-----|-----|-----|-----|-----|
| Comb scale pressers | ... | ... | ... | ... | 60 |
| Table haft and scale pressers | ... | ... | ... | ... | 226 |
| Razor scale pressers | ... | ... | ... | ... | 70 |
| Flat pressers | ... | ... | ... | ... | 45 |
| Total pressers' furnaces | | | | | 401 |

Warehouses—

| | | | | |
|---------------------------------------|-----|-----|-----|-----|
| Cutlery and table-knife manufacturers | ... | ... | ... | 211 |
| Pen and pocket-knife and razor makers | ... | ... | ... | 476 |
| Scale and spring merchants | .. | ... | ... | 41 |
| Razor makers | ... | ... | ... | 72 |

Warehouses (continued) —

| | | |
|---|--------|------------------|
| Shoe, butcher, bread and cook knife makers | ... | 35 |
| Silver, fruit and dessert knife makers | ... .. | 33 |
| Scissors makers | ... .. | 121 |
| Bone haft and scale cutters | ... .. | 26 |
| Stag, buck-horn haft and scale cutters | ... .. | 23 |
| Cutters and pressers of horn scale | ... .. | 69 |
| Ivory, horn and foreign wood haft and scale cutters | | 21 |
| Pearl cutters | ... .. | 14 |
| Edge-tool manufacturers | ... .. | 59 |
| Engravers'-tool makers | ... .. | 8 |
| Plane makers | ... .. | 7 |
| File manufacturers | ... .. | 111 |
| Shear makers | ... .. | 17 |
| Total warehouses | | <u>... 1,344</u> |

APPENDIX VIII

GRINDERS AND CUTLERS, AND GRINDSTONES IN OPERATION, IN SHEFFIELD AND DIS- TRICT IN 1908¹

NOTE.—The following figures were obtained from 378 factories, including 155 tenement factories which contained 2,597 “tenements,” *i.e.*, rooms or portions of rooms separately rented. A few of these tenements were employed in other trades.

GRINDERS—SHEFFIELD CITY.

| | HAND GRINDERS. | | MACHINE GRINDERS. | | |
|---|----------------|-----------|-------------------|---------|---------|
| | Men. | Boys. | Men. | Women. | Boys. |
| Table-blades | 898 | 144 | 2 | 15 | — |
| Pen- and pocket-blades ... | 618 | 75 | — | — | — |
| Razors | 394 | 57 | 3 | 1 | 1 |
| Scissors... .. | 194 | 28 | — | — | — |
| Surgical instruments | 28 | 1 | — | — | — |
| Forks and steels | 96 | 21 | — | — | — |
| Scythes and sickles | 40 | 3 | — | — | — |
| Sheep-shears | 91 | 10 | — | — | — |
| Files | 325 | 39 | 48 | — | 13 |
| Saws | 86 | 6 | 130 | — | 26 |
| Edge-tools, augers, etc. ... | 330 | 62 | 3 | — | — |
| Miscellaneous, including agri- cultural and mining imple- ments, hammers, vices, etc. } | 507 | 52 | 75 | — | 5 |
| | | | | | |
| Outside the City | 3,607 177 | 498 16 | 261 — | 16 — | 45 — |
| Total | 3,784 | 514 | 261 | 16 | 45 |

¹ Home Office Enumeration, 1908.

CUTLERS.

| | Men. | Women. | Boys. | Girls. |
|--------------------------|-------|--------|-------|--------|
| Table-knife cutlers ... | 1,744 | 278 | 238 | 106 |
| Spring-knife cutlers ... | 1,743 | 51 | 178 | 47 |
| Miscellaneous ... | 402 | 72 | 37 | 39 |
| Total ... | 3,889 | 401 | 453 | 192 |

♦ GRINDSTONES, ETC., IN OPERATION.

| | GRINDSTONES. | | EMERY WHEELS. | | GLAZERS. |
|------------------------------|--------------|-----------|---------------|-----------|-------------|
| | Wet. | Dry. | Wet. | Dry. | |
| Table-blades ... | 746 | 197 | — | — | 522 |
| „ „ (machine) ... | — | — | 25 | — | 9 |
| Pen- and pocket-blades ... | 556 | 5 | — | — | 481 |
| Razors ... | 250 | 137 | 32 | 5 | 263 |
| „ (machine) ... | — | — | 18 | — | — |
| Scissors ... | 176 | 102 | — | — | 155 |
| Surgical instruments ... | 16 | 11 | — | 1 | 28 |
| Forks and steels ... | — | 92 | — | 7 | 84 |
| Scythes and sickles ... | 45 | — | — | — | 12 |
| Sheep-shears ... | 86 | 7 | — | — | 68 |
| Files ... | 342 | — | — | 28 | 10 |
| „ (machine) ... | 52 | — | — | — | — |
| Saws ... | 90 | — | — | 7 | 43 |
| „ (machine) ... | 206 | — | — | — | 77 |
| Edge-tools, augers, etc. ... | 292 | 106 | — | 5 | 261 |
| „ „ (machine) ... | 3 | — | — | — | — |
| Miscellaneous ... | 357 | 36 | 4 | 136 | 312 |
| „ (machine) ... | 63 | — | 8 | 18 | — |
| Outside the City ... | 3,280 118 | 693 56 | 87 5 | 207 34 | 2,325 86 |
| Total ... | 3,398 | 749 | 92 | 241 | 2,411 |

APPENDIX IX

EXAMPLE OF HAND-WORK—SPRING-KNIFE CUTLER

THE SEPARATE PROCESSES OF A CUTLER'S TASK, WHEN BUILDING
UP A COMMON SINGLE-BLADED POCKET-KNIFE WITH STAG
COVERING.

*Materials Supplied: Metal Scales, with Bolsters, Covering Materials,
Blades, Springs, etc.*

I. *Scales*—

1. Clipping fashes round bolster.
2. Boring rivet-holes in scales, to plate measure.
3. Boring small holes for pinning covering on metal scales.
4. Setting and raping projections.
5. Pairing scales.
6. Matching scales to plate.
7. Pinning on covering.
8. Riveting.
9. Filing rivets inside scales.
10. Sawing projecting ends off covering.
11. Putting in points.
12. Dressing, taking down covering on sides level with scales.
13. Glazing bolster edges.
14. Knocking out points.
15. Inserting shield.

II. *Springs*—

16. Smithing springs.
17. Smoothing spring backs with file.
18. Marking springs and scales to match.
19. Boring springs.
20. Removing fash of boring.

II. *Springs* (continued)—

- 21. Cropping springs to exact length.
- 22. Filing spring ends.
- 23. Giving them bend.
- 24. Bunching springs for hardening.
- 25. Hardening and tempering springs.
- 26. Setting or trueing springs.
- 27. Glazing inside of springs.
- 28. Burnishing inside of springs.

III. *Hafts*—

- 29. Setting, wiring springs and scales together.
- 30. Hammering rivets.
- 31. "Rindering" bolsters, *i.e.* countersinking hole for rivet head.

IV. *Blades*—

- 32. Marking blades for boring.
- 33. Boring blades.
- 34. Removing fash from blades.
- 35. Filing tang.
- 36. Glazing and burnishing back of blade by bolster.
- 37. Glazing tang ends.

V. *Knife*—

- 38. Setting blades into hafts.
- 39. Riveting blades in.
- 40. Opening blades and setting them back into line with haft.
- 41. Filing heads of hafts.
- 42. Filing backs.
- 43. Drilling blades: making them "march" or "walk and talk" properly, *i.e.*, fall in exact centre between scales, click properly and work easily.

APPENDIX X

MORTALITY IN CUTLERY AND ALLIED TRADES¹

TABLE A.

CITY OF SHEFFIELD—MORTALITY IN CERTAIN TRADES DURING NINE YEARS, 1901 TO 1909, FROM ALL CAUSES, FROM PHTHISIS, AND FROM DISEASES OF THE RESPIRATORY SYSTEM.

| TRADE. | WORKERS. | | AVERAGE ANNUAL DEATH-RATE PER 1,000 LIVING. | | |
|-----------------------|----------|-------------|---|-----------|-----------------------|
| | Number. | Age. | All Causes. | Phthisis. | Respiratory Diseases. |
| Grinders | 3,941 | 18 and over | 30·4 | 15·1 | 5·4 |
| Cutlers | 3,889 | 18 „ | 29·3 | 5·8 | 6·9 |
| File cutters | 1,850 | 20 „ | 29·8 | 5·2 | 5·6 |
| Silver, etc., workers | 2,380 | 20 „ | 26·2 | 5·3 | 4·6 |
| Tailors | 941 | 15 „ | 20·4 | 1·5 | 3·8 |
| Printers | 487 | 20 „ | 16·4 | 3·7 | 2·7 |
| Joiners | 2,286 | 15 „ | 13·8 | 1·7 | 2·8 |
| All males | 124,000 | 20 „ | 16·6 | 2·7 | 3·4 |

¹ Report of Medical Officer of Health, City of Sheffield, 1909.

TABLE B.

CITY OF SHEFFIELD—MORTALITY IN THE GRINDING TRADE AND ITS BRANCHES, AND IN THE CUTLERY TRADE DURING NINE YEARS, 1901 TO 1909, FROM ALL CAUSES, FROM PHTHISIS, AND FROM DISEASES OF THE RESPIRATORY SYSTEM.

| TRADE AND BRANCH. | DEATHS. | | | | | |
|--|----------------|--|-----------|--|--------------------------|--|
| | ALL CAUSES. | | PHTHISIS. | | RESPIRATORY DISEASES. | |
| | No. | Rate per Annum per 1,000 living. | No. | Rate per Annum per 1,000 living. | No. | Rate per Annum per 1,000 living. |
| Total grinding | 1,077 | 30·4 | 534 | 15·1 | 192 | 5·4 |
| Forks and steels, do. ... | 32 | 37·0 | 17 | 19·7 | 4 | 4·6 |
| Augers, etc., do. ... | 11 | 22·6 | 9 | 18·5 | 1 | 2·1 |
| Surgical instruments, do. | 9 | 35·7 | 5 | 19·8 | 3 | 11·9 |
| Scissors, do. | 81 | 46·4 | 45 | 25·8 | 19 | 10·9 |
| Razors, do. | 123 | 33·1 | 52 | 14·0 | 22 | 5·9 |
| Edge-tools, do. | 70 | 27·9 | 43 | 17·1 | 8 | 3·2 |
| Knives—table and spring, do. | 402 | 29·4 | 193 | 14·1 | 72 | 5·6 |
| Sheep-shears, do. ... | 45 | 35·0 | 31 | 24·1 | 5 | 3·9 |
| Agricultural and mining implements, do. ... | 1 | 0·7 | — | — | — | — |
| Hammers, vices, anvils, etc., do. | 6 | 12·6 | 2 | 4·2 | 1 | 2·1 |
| Saws, do. | 53 | 27·3 | 17 | 8·7 | 7 | 3·6 |
| Scythes and sickles, do. | 12 | 33·3 | 8 | 22·2 | 3 | 8·3 |
| Files and rasps, do. ... | 105 | 30·9 | 57 | 16·8 | 18 | 5·3 |
| Miscellaneous, do. ... | 127 | 37·8 | 55 | 16·4 | 29 | 8·6 |
| Cutlers | 1,025 | 29·3 | 203 | 5·8 | 243 | 6·9 |
| All males (20 and over) | 18,478 | 16·6 | 3,036 | 2·7 | 3,801 | 3·4 |

TABLE C.

CITY OF SHEFFIELD—MORTALITY IN CUTLERY TRADES.

Deaths and Average Ages at Death of Male Workers, 1901-5.

| Trade and Branch. | Deaths in Five Years. | Average Age at Death. |
|--------------------------------------|-----------------------|-----------------------|
| Grinder | 601 | 50 |
| Cutler | 538 | 56 |
| Table-blade grinders | 131 | 50 |
| Pen- and pocket-blade grinder | 88 | 53 |
| Razor grinder | 68 | 48 |
| Scissors grinder | 42 | 52 |
| Surgical instrument grinder | 6 | 47 |
| Fork grinder | 22 | 57 |
| Scythes and sickles | 7 | 55 |
| Sheep-shears | 34 | 45 |
| File grinder | 58 | 48 |
| File forger | 72 | 62 |
| File hardener | 36 | 58 |
| File cutter | 275 | 53 |
| Saw grinder | 32 | 49 |
| Edge-tool trade | 44 | 48 |

APPENDIX XI

"RULES, ORDERS, AND REGULATIONS TO BE OBSERVED BY A SOCIETY OF SAW MAKERS IN THE TOWN OF SHEFFIELD

"MADE, CONCLUDED, AND AGREED UPON THE 18TH DAY OF
DECEMBER, 1797.¹

1. "That the Meetings shall be held as usual, on the first Monday in every month.

2. "That the Society shall be governed by a Master and two Wardens, with the assistance of Deputies from each shop as a Committee, who shall continue in office for twelve months. . . .

3. "That a box secured with three locks shall be provided. . . .

4. "That a Secretary or Clerk shall be chosen out of the Society. . . .

5. "That in order to raise the proposed fund and keep the same on a good foundation, each member shall contribute monthly one shilling, till a majority of the members shall find it expedient to make an alteration in that respect. Nevertheless twopence to be allowed thereout to each member for a pint of ale.

6. *Fines for arrears.*

7. "That any member entitled to the benefit of this fund shall receive ten shillings and sixpence per week for so long a time as he shall be out of his proper employ in the business of a SAW MAKER, and if he get work and employment in any other branch he shall be allowed after the rate of ten shillings and sixpence per week in consideration of his paying over and accounting to the Society for one-half of his earnings or wages. . . . (*If he gives false information he is to be excluded.*)

8. *Every member is to do his utmost to secure work before applying for benefit.*

¹ Sheffield (J. Crome), 1798, 8 pp., 8vo.

9. *Election by majority of members present.*
10. *Candidates to be proposed one month before being balloted for, but if the candidate is a datal man who has not served an apprenticeship he shall on no account be admitted unless he can earn sixteen shillings a week.*
11. *Undeserving members not to receive benefits.*
12. *No benefits till after twelve months' membership.*
13. "That in case any member of the Society shall in any public manner contribute to the relief of any person in the trade, not a member thereof, who shall be out of employ, such member on proof thereof being made, shall forfeit for the first instance of assistance so rendered one shilling, for the second two shillings, and for the third three shillings, or to be excluded.
14. *Present members out of employment to be admitted to benefit at once.*
15. *General meeting in July for audit of accounts and choice of officers.*
16. *Persons refusing to take office to be fined 2s. 6d.*
17. *Masters and wardens to attend or send the keys ; otherwise to be fined.*
18. *Fines to be disposed of by vote.*
19. *A minimum sum to be laid by and kept in hand (amount left blank).*
20. *The Society not to be broken up while it contains twenty members and sufficient funds to support those out of work.*
21. *Extraordinary meetings. Fines for absentees—threepence per head. If called without sufficient cause fine on Master of two shillings and sixpence.*
- "For every member attending and for every ticket sent, two pence shall be spent.
22. *Each subscriber to pay one shilling for the support of old age.*
23. "Old Age members to receive two shillings per week from the standing stock for life.
24. "Half the money if any remaining shall be equally divided at Christmas, each subscriber returning ONE SHILLING to the above standing stock.
25. *No member to teach above one apprentice in three years.*
26. "That if any member of this Society shall engage himself to work for any Manufacturer, Master or House, which engagement shall not be perfectly satisfactory to the majority of the workmen and journeymen of such Manufactory or House who shall be members of this Society" . . . *after investigation he may be excluded.*

APPENDIX XII .

PROCEEDINGS OF THE SHEFFIELD MERCANTILE AND MANUFACTURING UNION¹

“At a numerous and most respectable Meeting of Merchants and Manufacturers, convened by Circulars, and held in the Town Hall, Sheffield, on Wednesday, March 23, 1814, JOHN HOULT, Esq., Master Cutler, in the Chair ; the following Resolutions were passed unanimously :

“I. That a Society shall be established under the Title of ‘THE SHEFFIELD MERCANTILE AND MANUFACTURING UNION,’ of which any Merchant or Master Manufacturer in the Town and Neighbourhood of Sheffield, shall be a Member, on his giving his Name to the Chairman of the General Committee, and subscribing to the fund.

“II. That a General Committee shall be appointed with full powers to act for this Union, consisting of twenty-four Inland and Foreign Merchants to be chosen by this Meeting, and not less than Twenty-four Manufacturers from the respective Trades, each Trade electing two Members. This Committee shall meet at the Cutlers’ Hall on Monday Morning next at Ten o’Clock, and regularly each succeeding Monday at the same hour, and as much more frequently as they may be called together by their Chairman, under a proper forfeiture, except prevented by sickness or absence from Town—and at their first Meeting they shall appoint a Chairman, a Treasurer, a Solicitor, and a Secretary.

“III. That all the various Branches of the Sheffield Trade shall meet without delay and each elect two Deputies to the General Committee. They shall also appoint their respective Committees under the Titles of ‘The Table Knife Branch Committee,’ ‘The Edge Tool Branch Committee,’ etc., etc., who shall forthwith take into their serious and impartial consideration, the present state of

¹ Extracts from the *Sheffield Iris*, March 29 and April 5, 1814.

the prices of labour in their different Trades, and also any proposals of advances which may have been made to them by their workmen, and offer such prices to the said workmen as they may deem fair and equitable.

“ IV. That no Merchant, a Member of the Union, shall under a forfeit of 100 £ after Saturday next, purchase any Article of Sheffield Manufacture at a higher price than he paid in the year 1813, nor at any price whatever from persons who were not Master Manufacturers in that year, nor from any Manufactory in which any part of the grinders have suspended work for an advance of wages, until public Notice is given by the General Committee, that the prices in such particular Branch or Branches have been settled between them and the workmen.

“ This Resolution not to be regarded as obligatory unless agreed to and signed by the Foreign and Inland Merchants.

“ V. That no Master Manufacturer, Member of the Union, under a forfeiture of £100 shall after Saturday next, pay any workman higher wages for any description of work than he did in the year 1813, except in those branches of which public notice may be given by the General Committee, nor shall he hire or employ any workmen from any other Manufactory, until the General Committee give Notice that the prices in such Branch of Manufacture have been settled between that trade and the workmen.

“ VI. That the General Committee on receiving information from any of the Branch Committees, that a majority of workmen in such branch have accepted their proposals, shall immediately give Notice by public Advertisement of the same, when the Merchants will be at liberty to purchase Goods, and the Master Manufacturers to employ their Men in such Trades.

“ VII. That Manufacturers of little Property who may be inconvenienced by the suspension of Trade, shall be accommodated with small Loans without Interest, according to their respective Cases, at the discretion of the General Committee, on their giving adequate security in Goods or any other Property. Such Loans to be repaid in Six Months from the Date of the Advertisement by which their Branch of Trade is restored.

“ VIII. That the General Committee shall use their utmost exertions to bring Workmen into the Town, in those Branches of Trade not incorporated ; and endeavour to give every facility to labour by supporting and co-operating with ingenious Manufacturers in the erection of suitable Machinery, and in any other measures calculated to attain this desirable object.

“IX. That Circular letters describing the present state of the Sheffield trade and the reasons of the suspension shall be prepared by the General Committee and forwarded without delay by the Inland and Foreign Merchants and Master Manufacturers to their respective Correspondents. A requisite number to lie at the IRIS and MERCURY Offices to be delivered on application.

“X. That the five following Addresses shall be prepared, presented and issued as soon as possible by the General Committee, viz. :

“An Address to the Master Manufacturers strongly soliciting them to prosecute all such Workmen with promptitude and vigour as are found entering into combinations and conspiracies, and to assure them that they shall be fully and firmly supported and all their expenses paid by this Union.

“An Address to the Magistrates laying before them a description of the present awful state of the Trade, and respectfully entreating them to put the Laws in force against all persons who are found guilty of combinations and conspiracies, or of committing depredations upon persons and property.

“An Address to the Cutlers’ Company, requesting them to co-operate with the Merchants and Manufacturers in a petition to Parliament, to amend their Corporation Act, by rescinding the restrictive Clauses respecting Non Freemen and Apprentices.

“An Address to the Overseers of the Poor, requesting them not to grant relief to persons whose Masters are willing to employ them at the prices of labour they gave in the year 1813.

“A temperate and conciliatory Address to the Workmen of Sheffield, assuring them that all their complaints and proposals shall be taken into immediate and candid consideration, exhorting them peaceably to continue their work at the prices of 1813, until their respective cases are decided upon, and the proper relief afforded ; and pointing out the fatal consequences of their present proceedings both to themselves and the welfare and happiness of the Town.

“XI. That a Petition to Parliament be immediately prepared, praying for a repeal of those clauses contained in the Corporation Act which are regarded as injurious to the manufacturing interests of the Town at large ; and that the Expenses attending the said application be defrayed out of the subscriptions entered into for the purpose of carrying the Resolutions of this Day into effect.

“XII. That a Subscription be immediately commenced adequate to the important objects of this Union, and the Gentlemen present be requested now to put down the names of their respective Firms, with the amount of their Subscriptions in Books provided for that purpose, a deposit of 10 per Cent. to be paid to the Treasurer when he is appointed, and such further per Centage as from time to time the General Committee may order, and the Committee are hereby requested to use every means in their power to increase the number of Members and particularly to send Deputations for that purpose to such principal Merchants and Manufacturers as may not have sent in their names on or before the 4th of April, and finally to adopt such measures as may give the Union a character of permanence and stability, that it may constantly watch over and protect the Mercantile and Manufacturing interests of the Town of Sheffield.

“XIII. That the Thanks of this Meeting be given to the Select Committee, for their exertions in preparing the Plan of a Sheffield Union now adopted.

“XIV. That these Resolutions shall be immediately printed in Circulars, and transmitted by the Chairman to all the Merchants and Master Manufacturers in the Town and Neighbourhood, and that they shall also be inserted twice in the *Iris* and *Mercury* newspapers.

“JOHN HOULT, *Chairman*.

“XV. That the Thanks of this Meeting be given to the Chairman, for his impartial conduct in the Chair, and his early and diligent attention to the business.

“PS.—All the Foreign and Inland Merchants and Master Manufacturers in the Town and Neighbourhood are most earnestly and respectfully requested to send in their Names, as Members of the SHEFFIELD MERCANTILE AND MANUFACTURING UNION, to the General Committee, which will sit next Monday forenoon at the Cutlers' Hall. If any Merchants or Manufacturers have not received copies of the Resolutions, they may be supplied with them on application at the *Iris* Office.

“All the Branch Committees are requested to take down the Names of Members of the Union in their respective Trades, and send Lists of the same to the General Committee on Monday.

“*March 23, 1814.*”

"SHEFFIELD MERCANTILE AND MANUFACTURING UNION.

"SHEFFIELD, *March 28, 1814.*

"At the First Meeting of the General Committee of the 'Sheffield Mercantile and Manufacturing Union,' held this day at the Cutlers' Hall, the following Resolutions were passed unanimously :

"I. That the following Gentlemen be appointed as Officers to this Union, in conformity to the 2nd Resolution :

PETER BROWNELL, Esq., to be Chairman.

JACOB ROBERTS, Esq., to be Treasurer.

CHARLES BROOKFIELD, Esq., to be Solicitor.

J. W. BROADBENT, to be Secretary.

"II. That Messrs. Thomas Holy, Peter Brownell, Jacob Roberts, George Naylor and Benjamin Colley be appointed a Deputation to wait, on Wednesday next, upon all Inland and Foreign Merchants in the Town and Neighbourhood . . . respectfully to solicit them to become Members of this Union.

"III. That no Master Manufacturer (Member of this Union) under a forfeiture of 100 £ shall employ any workman in any branch of Trade whatever, who shall be proved to have contributed money, after Saturday next, towards the support of any person who has discontinued his work for an advance of wages, until a final arrangement is made with all the Branches of the Trade.

"IV. That if on or before the 30th day of April ensuing, the Grinders in all the various parts of the Sheffield Trade shall not have agreed with the respective Committees, upon the prices of their labour, then, after that day, no Merchant (a member of this Union) under a forfeiture of 100 £ shall purchase any Goods whatever, nor shall any Manufacturer (a Member of this Union) under the same forfeiture employ any Grinders whatever in any part of the Sheffield Trade until Public Notice be given by the General Committee that the whole of the Grinders in all the respective Branches have accepted the proposals of the Branch Committees.

"V. That every Manufacturer (a member of this Union) who may be under the necessity of giving legal Notice to his Grinders, shall, on or before Saturday next, give Notice to all the Grinders in his service, to leave their employ in one month.

“VI. That the General Committee do strongly recommend the Master Manufacturers of Sheffield, to become Tenants of the Troughs at the various Wheels, and to let out the same to their Grinders, monthly, and to take measures to carry this into immediate effect; and the Proprietors of the various Wheels are hereby respectfully requested to let their Troughs, if possible, to Master Manufacturers.

“PETER BROWNELL, *Chairman.*”

“TO THE MASTER MANUFACTURERS OF THE TOWN OF SHEFFIELD
AND ITS VICINITY.

“The Committee of the SHEFFIELD MERCANTILE AND MANUFACTURING UNION most earnestly solicit your attention to the Resolutions which were passed at the very numerous and respectable Meeting of MERCHANTS AND MANUFACTURERS held in the Town Hall on Wednesday, March 23, 1814, and to co-operate with them in a measure which existing circumstances and the present state of the Trade have rendered absolutely necessary for them to undertake.

“The Committee, as you will perceive by their Resolutions, have neither wish nor disposition to oppress the labouring class of Mechanics in the different Branches of Trade carried on here; but to afford them, and contribute with cheerfulness, every encouragement their INDUSTRY and MERIT are justly entitled to.

“The laudable object that they have now particularly in view (and which they hope, either as individuals, and while embodied as a Committee, will never cease to claim their unremitting attention), is to give respectability, and stability, and permanence, to the various branches of our Manufactories, which the late unprecedented and illegal Combinations must, if permitted to take effect, eventually destroy, and thereby force the Staple Trade from this long established Emporium, either to other places in the United Kingdom, or what is still more to be apprehended, and worse in its consequences, will contribute to the promotion and increase of Foreign, and already Rival Manufactories.

“The Committee deem it by no means necessary to advert to any argument to induce you to co-operate in endeavouring to establish a mutual understanding, productive of reciprocal benefits between the Manufacturers and their Workmen, as it is obvious, from numerous facts, that a few ill-advised and evil disposed Men, combined for the purpose of obtaining an object by threats,

and other unwarrantable measures, overawe and intimidate the peaceable and industrious, thereby accomplishing their proposed ends; and one unreasonable demand thus conceded will be a prelude to a succession, till the Manufacturers of this Town and Vicinity are utterly involved in ruin.

“The Peace and good order of the Town at this juncture particularly demand UNION and energy amongst all Manufacturers, as observation tends forcibly to demonstrate that exorbitant Wages do not promote industry and sobriety; but on the contrary, produce idleness and dissipation, with their concomitant evils.

“Convinced of the urgent importance of the measure, as it respects the prosperity and continuance of our Manufactories, they deem it indispensably necessary to establish harmony between the employer and his men, which contribute so essentially to increase the domestic comforts and enjoyments of the labouring class of society; they therefore earnestly call upon you to unite with them in this important undertaking, and also particularly request that you will be vigilant in detecting, and prompt in prosecuting, all illegal combinations amongst your Workmen, in the due performance of which they engage fully and firmly to support and indemnify you from all expenses incurred in prosecuting for any depredation that may be committed on your property, or for any unlawful Combination amongst your Workmen—you being a member of the UNION and conforming to the Regulations thereof.

“PETER BROWNELL, *Chairman of the Committee.*

“CUTLERS’ HALL, *March 28, 1814.*”

“TO THE WORKMEN OF SHEFFIELD AND ITS NEIGHBOURHOOD.

“It has become the duty of the General Committee of the Sheffield Mercantile and Manufacturing Union, established on the 23rd inst. for the purpose of protecting the interests of this large commercial town, to address you, at a time and under circumstances of no common importance. Considerable numbers of you have lately not only demanded very large advances upon your wages, but adopted the most violent and illegal measures to enforce the unqualified submission of your employers. The Committee, however, are willing to waive the language of reproach, for whilst they cannot but strongly condemn many of your proceedings, they yet regard you with feelings of kindness and have a strong interest in your welfare. They both respect and value an honest, peaceable

and ingenious mechanic, and they know there are many such amongst you, who would most gladly enter into proper arrangements with their masters, were they not overawed and deterred by violent and unreasonable men. The Committee are friends to peace—to order—to justice—to moderation ; but decided enemies to tyranny and oppression whether exercised by masters or men. It is one of the leading objects of this Union to present an opportunity to the master manufacturers and their workmen amicably to adjust their differences and arrange their prices under the protection and sanction of a powerful and respectable Association. Some branches of trade have already formed and others are forming Committees to take all your complaints and proposals into immediate and candid consideration. / You are therefore most earnestly entreated, as you value your own happiness, and the peace and prosperity of the town, to co-operate with the merchants and manufacturers in an object so desirable, by continuing your work at the regular prices of the year 1813, until your respective cases are decided upon, and the proper relief afforded. All those who have been induced to quit their work by threats and intimidation, are requested immediately to resume it ; and are assured that on giving information to the Committee of any violence which may be attempted upon their persons or property, prosecutions shall be immediately commenced against the offenders at the expense of the Union. The Committee would certainly very much regret the necessity of resorting, in any instance, to the terrors of the law, but they are firmly determined to protect peaceable and innocent individuals from injury, by the most prompt and vigorous exertions in bringing to justice all persons concerned in combinations and conspiracies, or in depredations upon persons and property.

“It is not the intention of the Committee to enter upon the question of the ruinous effects that may be produced both on the foreign and inland market by excessive advances in the prices of labour. It is a subject of too great importance and extent to be decided in the present address. They will merely state the well-known fact that the average rate of labour here is, even at present, higher than in many towns in the United Kingdom, where coal and ironstone are equally plentiful, and where numerous articles are now manufactured as low, and in a few instances rather lower, than at Sheffield. These infant manufactories are rapidly increasing, so that the certain consequences of large and injudicious advances, would be the gradual transfer of some branches of our trade to other places. It is almost needless to say how little you would be

benefited by following the removal of various branches of trade to towns where the rate of labour is lower, because of course you would there be obliged to work at prices inferior to your present wages.

“The Committee are sincerely desirous that every industrious man should be able to gain a comfortable livelihood by moderate labour. They have entire confidence that the Branch Committees while they resolutely resist all unjust demands will proceed in the regulations of prices upon this large and liberal principle; and there is every reason to expect that if the workmen are influenced by the same friendly and conciliatory spirit, all these unhappy differences will be speedily terminated. You are therefore seriously exhorted to pause and to consider the fatal consequences of persisting in your present conduct. The Union are unalterably resolved to persevere in those important measures which are now commenced for the purpose of fixing the prices of labour upon an equitable and permanent basis. You cannot but be sensible that deep and extensive distress must soon be felt in all quarters if you do not return to your duty, and the ruin of many families be the inevitable result. The Committee therefore do once more most solemnly, most impressively, call upon you instantly to abandon all intemperate and illegal proceedings, to resume your usual avocations and cordially to unite with the Merchants and Manufacturers in their endeavours to restore peace and harmony to the town and trade of Sheffield.

“Signed on behalf of the General Committee of the Sheffield
Mercantile and Manufacturing Union,

“PETER BROWNELL, *Chairman.*”

“TO THE COMMITTEE OF THE MASTER MANUFACTURERS OF THE
PENKNIFE CUTLERY.

“GENTLEMEN,—Having taken into consideration the ADDRESS TO THE WORKMEN, lately published by the Master Manufacturers, concerning the unsettled state of the Trade, from what is called the unreasonable demand of Wages, We, the Penknife Grinders, cannot conceive that this charge is in the least degree applicable to us. We have had our present Wages since the 7th of February, 1814, and we have heard little or no fault found with our Prices; for our own part we should wish to have an amicable Meeting with our Employers, to settle any alleged difference that can be proved injurious or unreasonable. With respect to frequent Advances, we disclaim every such ungenerous idea, and we are willing to pledge

✓ ourselves for any limited reasonable time, not to ask for further increase of Wages, nor even then, unless it can be proved that the advance of Wheel-room and Tools, or the necessities of Life, has arisen beyond a given maximum. In such case, if judged proper between our employers and ourselves, reasonable time shall be given for such needful advance to take place.

“THE PENKNIFE GRINDERS.

“SHEFFIELD, *April 4, 1814.*”

“TO P. BROWNELL, ESQ.,

“*Chairman of the General Committee of the Sheffield Mercantile Manufacturing Union.*”

“SIR,—As forming a part of that Body of Workmen, to whom the General Committee of which you are Chairman have condescended to offer a Conciliatory Address, we feel ourselves powerfully called upon to state the views by which we have been influenced, the end we aim at, and our willingness to accomplish that end in the Unity of Peace and Concord.

“Although we cannot allow that the Exordium with which the Address commences, is founded upon fact (in so far as it might be intended to apply to *us*), yet as you propose to waive the language of reproach, we will not attempt that of recrimination. We have neither “demanded large advances upon our wages” nor had recourse to “the most violent and illegal measures to enforce the unqualified submission of our employers”; neither are we “overawed and deterred by violent and unreasonable men” from meeting the Branch Committee of our Trade in the perfect spirit of conciliation, but are honestly ready to discuss the propriety of our conduct, and the necessity of our fair claims being complied with, whenever our Employers, or the Committee deputed by them, shall chuse to give us the opportunity. We have long laboured under complicated misery; your prices neither affording competence for the present nor provision for the future. Our utmost exertions cannot enable us to meet the accumulating rise in the necessities of life; we seek therefore an equitable remuneration for our labour and we claim the privilege which ought to be acceded to every man of putting a reasonable value upon his own TIME, that being the only commodity a Poor Man has to dispose of. We are also “friends to peace—to order—to justice—to *moderation*”; and shall therefore not at present examine the *justice* of your claims to these godlike attributes.

"We have formed ourselves into no combination to distress the Master Manufacturers of Sheffield, and deprive *them* of the power to provide for *their* families, but again repeat, that we are anxious by every attainable means to remove obstructions from whatever quarter they may originate ; and should our Branch Committee be really actuated by similar sentiments, we cannot but augur a speedy end to the disunion which has unhappily taken place between the Masters and their Workmen, and fervently hope that our humble endeavours may tend to accelerate that much to be desired period.

"In these remarks we have been actuated by no hostility to the Gentlemen of the Committee, for most of whom we cannot but entertain serious respect ; nor do we mean any invidious distinction by addressing you personally—this appeared to be called for by your being elected Chairman of that Committee.

"We remain, Sir,

"With every proper deference and obligation,

"Your very humble servants,

"THE JOURNEYMEN TABLE-KNIFE HAFTERS
of the Corporation of Hallamshire.

"*April 1, 1814.*"

APPENDIX XIII

SCHEME FOR UNEMPLOYMENT INSURANCE AND RELIEF OF DISTRESS, 1820

FORMULATED BY J. EYRE, JAMES MONTGOMERY,
E. PICKSLAY, E. RHODES, T. ASLINE WARD¹

“An unnecessary depression of wages having been occasioned in this neighbourhood by an abuse of the Poor Laws, acting upon a necessary depression from the failure of trade: and this state of things being ruinously injurious to the artisan, without being beneficial to the merchant or manufacturer; [and] while the credit of our staple commodities is deeply hazarded in a process which is utterly deranging to the approved character of business heretofore observed—by throwing the manufacturing department into the hands of persons without capital, whose necessities compel them to dispose of their wares immediately, and at any price which they can obtain—it appears both desirable and expedient to afford some relief to the poor workmen by means of higher wages. . . . It is therefore recommended to the masters and journeymen in the different branches of hardware to meet and agree upon some fair standard of wages for every kind of work, from which it shall be disgraceful for either to depart; and the prices of 1810 having been generally deemed equitable, it may be well to revise these and form a scale as near to them as present circumstances will allow: the several lists when adjusted to be laid before the magistrates for their approval and in testimony that all parties concerned acquiesce in the same. No subsequent change to be made in any of these lists except by the general agreement of masters and journeymen throughout the particular branch of trade affected by it.

“It is further recommended that a fund be raised for the purpose of assisting workmen out of employment, or whose earnings at the

¹ *Sheffield Iris*, March 21, 1820.

stipulated prices are too small for the maintenance of themselves or their families; and that this relief amount to one-third of whatever parish allowance (according to the parochial scale) they may receive at the time, and shall be granted to them in addition to the same. That the said fund be raised and supported by weekly contributions of one penny per shilling from the earnings of every workman, female, or apprentice belonging to each manufactory wherein the stipulated prices are given: Also by monthly contributions from every master of not less than 1d. per head for all persons whether male or female employed in his manufactory or out-workers connected therewith: And lastly by donations or subscriptions of the Nobility, Clergy, Gentry, Merchants, Tradesmen, and others in the town and neighbourhood, who shall be personally solicited to lend their aid to the accomplishment of so laudable an object. It is further recommended that no manufacturer shall directly or indirectly pay any part of his workmen's wages in stuff, or make any deduction from the same in the way of discount, or otherwise than in liquidation of just and lawful debts or obligations. It is finally recommended, that the fund to be thus raised and applied be vested in Trustees, not engaged in any mercantile or manufacturing business, but, if such can be obtained, men of rank, fortune, and character in the neighbourhood, or having property in Hallamshire: the administration, however, of the said fund to be entrusted to a Committee of twenty-four gentlemen, either in business or not, who shall consent to act."

APPENDIX XIV

ARTICLES OF THE SHEFFIELD MECHANICAL TRADES ASSOCIATION

ESTABLISHED JULY 9, 1822

1. "That a Society be now formed to be called 'an Association for the protection of the Spring Knife, Table Knife, Scissor, Pressers, Fork and File Trades, and such other trades as may be hereafter admitted.'"

2. "That this Association be governed by a Committee of Directors consisting of two persons from every branch of each trade, with a President, Vice-President, Secretary and Beadle."

3. *Directors to be elected by the branches: President and Vice-President by the Directors.*

4. *Half the Directors to retire every two months.*

5. *Every affiliated trade to deposit 1s. per member, and be liable to occasional calls or subscriptions.*

7. "That the funds of this Association be appropriated for the protection of the United Trades in such manner as the Directors for the time being may deem necessary."

8-9. *Conduct of business at meetings.*

10. "That no person belonging to any of the Associated Traders shall have more than two apprentices at the same time except under certain regulations to be hereafter stated."

11. "That all apprentices taken from this day forward shall be such boys only whose parents do, or such orphans whose fathers did when living, belong to some of the Associated Trades, and no person shall keep an apprentice more than two months before he is properly bound as an apprentice to him."

12. "That no person shall commence manufacturing in any of the Associated Trades, who has not served a legal apprenticeship to some one of those trades, and who has an Establishment, *i.e.*, a

Shop and Tools, etc. ; and not having more than two apprentices, nor shall he take more apprentices, but subject to the 10th and 11th Article ; and such persons as intend to commence manufacturers, shall give notice of their intention to the Directors one month previous to their commencement."

13. "That all able-bodied men and boys who cannot obtain employment at the stated price of their own trade shall be maintained from the Association's funds, and not suffered to apply for parochial relief while that fund can support them ; but should more than one-fourth part of any trade be out of employment, then the Directors shall give orders that those employed in that trade work only a given number of hours ; and should their earnings then be less than the average of their earnings for the last three months past, that deficiency shall be paid to them from the aforesaid fund, until three-fourths of such trade are restored to employment at their stated prices."

14. "That all journeymen in this Association shall provide a workbook for each Master by whom he is employed, and shall see that his work is regularly entered in such books."

15. "That only such mechanical trades of Sheffield the majority of which [*i.e.*, of whose members] are organized, paying regularly to their own funds, and having regular officers, etc., after being approved by the Directors, shall be eligible to join this Association, and that the Directors be ready to assist in organizing or giving their services."

16. *Accounts to be made up and examined and reported to the trades by the Directors.*

17. *Fines, not specified, to be levied by the Directors for breaches of rules.*

APPENDIX XV

PIECE-WORK PRICE STATEMENTS ISSUED BY THE SEVERAL BRANCHES OF THE SHEF- FIELD CUTLERY TRADES

NOTE.—This list contains particulars of such price-lists for cutlery work as have come to light in the course of the present investigation.

TABLE KNIFE TRADE.

FORGERS.

1845. Statement of Prices for forging table-knife blades.
1846. List of Prices and Counts for forging table-knife blades, etc.,
as agreed to between manufacturers and workmen at the
Cutlers' Hall. To commence April 1st, 1846.

Representative Prices from Last Item.

| | |
|------------|--|
| At 4s. | per "daywork" for In-workers in the Country Trade. |
| At 4s. 6d. | " " Out-workers " " |
| At 3s. 6d. | " " In-workers in the Foreign Trade. |
| At 4s. | " " Out-workers " " |

Representative Counts for Balance Waterloo, King William, and Adelaide Patterns.

| | | | | | |
|--------------------------------------|------------------------|-----|-----|-----|---------------------------|
| Desserts | ... | ... | ... | ... | 3 doz. and 6 per daywork. |
| Small Tables | ... | ... | ... | ... | 3 doz. and 3 " |
| Tables... | ... | ... | ... | ... | 3 doz. " |
| 7½ in. carvers with carver bolsters, | 18 blades per daywork. | | | | |
| 8½ in. | " | " | 17 | " | " |
| Etc., etc. | | | | | |

1888. *Reprint of last list.*

GRINDERS.

1853. Table Knife Grinders, List of Prices.

1859. Table Knife Grinders, List of Prices. (*Johnson and Wright, 12 pp.*)

"All members working on their masters' tools to allow a deduction of one-fourth from this list of prices for rent, tools, and expenses."

1859. List of Prices for Grinding Shoe, Butcher, Bread, and Cooks' Knives, etc.

"All In-grinders to allow a deduction of one-fourth from this list of prices for rent, tools, and expenses."

HAFTERS.

1810. Table Knife Hafters. Statement of Prices.

1844. Statement of Prices: Table Knife Hafters, May 27th, 1844.

Contains an address to employers stating that the previous list had given rise to so much misunderstanding that the hafters have prepared this new list in order to make clear the difference between "country" and "foreign" work.

1849. Table Knife Hafters. List of Prices. *Distinguishes prices for country and foreign work.*

1859. A Copy of the Regulated List of Prices of the Table Knife Hafters for Country and Foreign Work.

1872. Table Knife Hafters. Statement of Prices.

HAFT AND SCALE CUTTERS.

1843. List of Prices. Sheffield Bone Haft and Scale Cutters.

STEEL FORK TRADE.

Lists issued in 1866, 1878, 1879.

SPRING KNIFE TRADE.

FORGERS.

1820. Prices of Forging Pen Knife Blades. Resolution agreed to December 22nd, 1819: "That after the 1st January, 1820, no penknife blade forger shall forge any blades for any persons but such as find their own steel."

"All wages to be paid in money."

- Bef. 1830. A Regulation of Prices for Making Scales and Springs.

- c. 1820. List of Prices for Forging Pocket Blades.

1824. A statement of Prices of Spring Pocket Knives, including scales and blades, forging, setting in and hafting, as agreed to in the year 1824 by the workmen of Heeley, near Sheffield.
1825. A Regulation for Forging Scales and Springs, from 1810.
1825. Statement of Prices of Spring Forging in the Chine, Lock, and Sneck Line. Agreed to in February, 1825. *Specifies allowances for hearth-room at $\frac{1}{2}$ d. in the 1s.*
1844. Revised List of Forging Pen and Pocket Knife Blades of 1810. "All wages to be paid in money." (*Iris Office, 20 pp., 1844.*)
Introductory Memorandum. "At a meeting of the Pen and Pocket Blade Forgers held on the 30th day of October, 1843, it was unanimously agreed that . . . no Pen or Pocket Blade Forger shall Forge any Blade for any Person but such as find their own Steel."
 "All blades priced by the length of the haft."
 "All out-workers to receive 3d. per gross for Pocket Blades, and 2d. do. for Pens: Rent, Hearth Room, and Tools."
 "All masters to find Tools and Materials and Rent for all in-workers."
(Twenty pages of details, including forging of springs.)
1866. Revised List for Forging Pen and Pocket Blades. (*Brickbank, 12 pp., 1866.*)
 "All wages to be paid in money."
 "All masters to find their own steel, both for in- and out-workers."
 "All out-workers to receive one penny in the shilling for tools, coals, and shop rent, for both Pen and Pocket Blades."
1891. May, 1891. Revised List of Prices for Forging Pen and Pocket Blades, and articles connected with the Spring Knife Trade. (*Neville, 16 pp.*)
 "All manufacturers wanting workmen are requested to apply to the Secretary or Committee; and all Members of the Society wanting work are requested to apply in the same manner."
 "All In-workers to have all Working materials and Tools found them by their employers."
 "Out-workers to receive one penny to the shilling as Tool money."

GRINDERS.

1810. Grinders' Statement to take place January 18th for the 1810 Statement.

*The following classes of work occur:—*Glazed Blades, Bone Blades, Common Knives, Stafford Knives, Metal Blades, Silver Shaped Blades, Fish Hook Knives and Blades, Hollow Packeds, Sheep Feet Common Steel, Powder Blades, Two Blade Knives, Pocket-Tang Pen Blades, Piece Blades, Sportsman's Knives, Surgeons' Blades, Tined Pruners, etc.

"Grinding to be paid for when done, and to be deducted from the finishing. Pen blades, 4d.; Stafford, 6d.; Plain, 6d."

"All wages to be paid every week in money."

1831. Prices of Pen Knives Grinding, Glazing and Polishing as agreed to July 4th, 1831.
1831. Statement of Pocket Blades Grinding and Glazing, Sheffield, July, 1831.
1901. Spring Knife Grinders' Union. Revised Price List (Pocket Blade work), Grinding and Glazing. Adopted, February 27, 1901. 2 pp.

CUTLERS.

1810. Statement of Pen and Pocket Knives, as agreed to in the year 1810.

"All twelve knives to the dozen, and a penny allowed on every shilling for files."

1814. Prices of Pen and Pocket Knives, 1814.

"All twelve to the dozen, one penny allowed on every shilling for files. The wages to be paid in money and no articles whatever to be put off instead of money."

1820. Prices of Manufacturing Chine Brass Shoulder Pocket Knives, all thirteen to the dozen, and one half-penny allowed on every shilling for files. January 1, 1820. *Includes:* Hafting, buffing, buretting, springs cleaning, etc.

1820. *Supplement to above.*

1824. *Reprint of 1810 statement.*

1831. Corrected statement of Pocket and Corbo Knives, for 1831.

1831. Statement of Pen and Pocket Knives, agreed to in the year 1831.

1872. Statement of Pen and Pocket Knives as agreed to in the year 1810. All twelve knives to the dozen, and one penny allowed on every shilling for files. (*W. Bricklebank, 24 pp., 1872.*)

Pp. 1-15. Reprint of old list.

Pp. 16-24. "Supplement to the statement of 1810 containing the omissions and additions deemed necessary to make (*sic*) to set aside the disputes which continually occur betwixt the workmen and their employers."

Includes : Statement of Lobster Knives ; Statement of Spring Rule Knives ; Prices of Scissors Knives, agreed to in May, 1824 ; Prices of Fleam Cases ; Cast Yellow Framed Knives.

"N.B.—As the object we are striving for is only an equitable price for our labour, we hope the masters will receive this appendix, and act upon it simply as it appears, without any deviation whatever ; and if anything has still been omitted an addition at a future time may be necessary.

"THE JOURNEYMEN SPRING KNIFE CUTLERS,
"SHEFFIELD, *September 27, 1872.*"

RAZOR TRADE.

FORGERS.

1810. Razor Forgers' List of Prices.

1866. Razor Forgers' List of Prices.

GRINDERS.

1810. Razor Grinders' List of Prices.

1873. Razor Grinders' List of Prices.

HAFTERS.

1814. A general Statement of Prices for Razors to commence the 13th day of January, 1814.

Includes : Hafting, setting in, wetting, putting in shields, buffing silver revits, bushing, cutting scales, pressing scales.

"All dy'd and mock shall work fourteen to the dozen."

PRESSERS.

1876. Razor Scale Pressers. Price Statement.

SCISSORS TRADE.

FORGERS.

1819. Scissors Forgers' List of Prices.
 1844. Scissors Forgers' List of Prices.
 1872. Scissors Forgers' List of Prices.

GRINDERS.

1810. Scissors Grinders' List of Prices.
 1825. Scissors Grinders' List of Prices.
 1844. Scissors Grinders' List of Prices.
 1873. Scissors Grinders' List of Prices.

WORKBOARD HANDS.

1817. Scissors Workboard Hands. Statement of Prices.
-

FILE TRADE.

FORGERS.

N.D. Prices for Forging Files and Rasps.

Single-handed work. Double-handed work.

1873. List of Prices for Forging and Cutting Files and Rasps as agreed to at a Conference of Manufacturers and Workmen held in the Cutlers' Hall, July 16th, 1873. To come into operation September 1st, 1873.

Separate lists for forging and cutting but printed consecutively.

This list was an advance over that of 1854.

CUTTERS AND HARDENERS.

1836. Prices of cutting Files and Rasps. To take place February 1st, 1836.
 1866. File Hardeners. List of Prices.
 1883. List of Prices for Cutting Files (*by Hand*).

SAW TRADE.**SAW SMITHS.**

- 1814. Saw Makers' Price Statement.
- 1824. Saw Makers' Price Statement.
- 1844. Saw Makers' Price Statement.

GRINDERS.

- 1859. List of Prices for Grinding and Glazing Saws.

HANDLE MAKERS.

- 1847. Saw Handle Makers' List of Prices.

EDGE TOOL TRADE.**FORGERS.**

- 1836. Statement of Prices for Forging Edge Tools.
Agreed to by the Journeymen Edge Tool Forgers,
at a meeting held 10th August, 1836.
- 1846. Statement of Prices for Forging Edge Tools.
- 1864. Edge Tool Forgers' List of Prices. To come into operation
May 23rd, 1864.
- 1872. Edge Tool Forgers' List of Prices. To come into operation
June 29, 1872.

GRINDERS.

- 1872. Edge Tool Grinders' List of Prices.
A reprint of an earlier list.

APPENDIX XVI

FOREIGN TRADE IN CUTLERY

I. UNITED KINGDOM

TABLE A.

EXPORTS OF HARDWARE AND CUTLERY.

| Year. | £000's. | Year. | £000's. | Year. | £000's. | Year. | £000's. |
|----------|--------------------|----------|---------|----------|--------------------|----------|---------|
| 1818 ... | 1,460 ¹ | 1845 ... | 2,183 | 1863 ... | 3,833 | 1881 ... | 3,881 |
| 1819 ... | 1,150 | 1846 ... | 2,181 | 1864 ... | 4,114 | 1882 ... | 4,107 |
| 1826 ... | 2,271 | 1847 ... | 2,342 | 1865 ... | 4,327 | 1883 ... | 3,756 |
| 1829 ... | 1,390 | 1848 ... | 1,860 | 1866 ... | 4,366 | 1884 ... | 3,143 |
| 1831 ... | 1,622 | 1849 ... | 2,201 | 1867 ... | 3,942 | 1885 ... | 2,852 |
| 1832 ... | 1,433 | 1850 ... | 2,641 | 1868 ... | 3,276 ² | 1886 ... | 2,846 |
| 1833 ... | 1,466 | 1851 ... | 2,827 | 1869 ... | 3,737 | 1887 ... | 2,921 |
| 1834 ... | 1,485 | 1852 ... | 2,692 | 1870 ... | 3,812 | 1888 ... | 3,168 |
| 1835 ... | 1,833 | 1853 ... | 3,665 | 1871 ... | 4,006 | 1889 ... | 2,989 |
| 1836 ... | 2,271 | 1854 ... | 3,868 | 1872 ... | 5,089 | 1890 ... | 2,764 |
| 1837 ... | 1,459 | 1855 ... | 2,960 | 1873 ... | 4,939 | 1891 ... | 2,528 |
| 1838 ... | 1,498 | 1856 ... | 3,747 | 1874 ... | 4,403 | 1892 ... | 2,195 |
| 1839 ... | 1,829 | 1857 ... | 4,016 | 1875 ... | 4,264 | 1893 ... | 2,047 |
| 1840 ... | 1,349 | 1858 ... | 3,278 | 1876 ... | 3,483 | 1894 ... | 1,834 |
| 1841 ... | 1,624 | 1859 ... | 3,809 | 1877 ... | 3,338 | 1895 ... | 1,857 |
| 1842 ... | 1,398 | 1860 ... | 3,771 | 1878 ... | 3,298 | 1896 ... | 2,122 |
| 1843 ... | 1,746 | 1861 ... | 3,426 | 1879 ... | 3,028 | 1897 ... | 2,104 |
| 1844 ... | 2,179 | 1862 ... | 3,310 | 1880 ... | 3,521 | 1898 ... | 1,987 |

TABLE B.

EXPORTS AND IMPORTS OF CUTLERY ONLY.

(Not Separately Stated prior to 1898.)

| Year. | EXPORTS. | IMPORTS. | Year. | EXPORTS. | IMPORTS. |
|----------|----------|----------|----------|----------|----------|
| | £000's. | £000's. | | £000's. | £000's. |
| 1898 ... | 556 | — | 1906 ... | 707 | 110 |
| 1899 ... | 603 | — | 1907 ... | 770 | 154 |
| 1900 ... | 639 | 21 | 1908 ... | 614 | 158 |
| 1901 ... | 637 | 35 | 1909 ... | 656 | 156 |
| 1902 ... | 660 | 34 | 1910 ... | 813 | 172 |
| 1903 ... | 685 | 35 | 1911 ... | 851 | 170 |
| 1904 ... | 697 | 58 | 1912 ... | 883 | 169 |
| 1905 ... | 667 | 79 | | | |

¹ 1818 to 1867, declared real values.

² 1868 to 1898, declared values.

TABLE C.

CUTLERY EXPORTS FROM SHEFFIELD TO THE UNITED STATES, INVOICED
THROUGH THE U.S. CONSULATE.

(Compiled from Reports on "Commercial Relations of the United States,"
Washington.)

CUTLERY.

| Year ending | | £ | Year ending | | £ |
|----------------|-----|------------|----------------|-----|------------|
| Sept. 30, 1868 | ... | 574,000 | Dec. 31, 1890 | ... | 228,000 |
| Dec. 31, 1869 | ... | 284,000 | " 1891 | ... | 113,000 |
| " 1870 | ... | Not stated | " 1892 | ... | 124,000 |
| " 1871 | ... | Not stated | Sept. 30, 1893 | ... | 119,000 |
| Sept. 30, 1872 | ... | 350,000 | " 1894 | ... | 81,000 |
| " 1873 | ... | Not stated | " 1895 | ... | 148,000 |
| " 1874 | ... | 226,000 | " 1896 | ... | 136,000 |
| " 1875 | ... | 191,000 | June 30, 1897 | ... | 159,000 |
| " 1876 | ... | 132,000 | " 1898 | ... | 61,000 |
| " 1877 | ... | 141,000 | " 1899 | ... | 76,000 |
| " 1878 | ... | 156,000 | " 1900 | ... | 95,000 |
| " 1879 | ... | 161,000 | " 1901 | ... | 93,000 |
| " 1880 | ... | Not stated | " 1902 | ... | 75,000 |
| " 1881 | ... | Not stated | " 1903 | ... | Not stated |
| Dec. 31, 1882 | ... | 246,000 | " 1904 | ... | Not stated |
| " 1883 | ... | 242,000 | Dec. 31, 1905 | ... | 78,000 |
| " 1884 | ... | 170,000 | " 1906 | ... | 85,000 |
| " 1885 | ... | 147,000 | " 1907 | ... | — |
| " 1886 | ... | 176,000 | " 1908 | ... | 56,000 |
| " 1887 | ... | 206,000 | " 1909 | ... | 64,000 |
| " 1888 | ... | 210,000 | " 1910 | ... | 58,000 |
| " 1889 | ... | 226,000 | | | |

FILES.

| Year ending | | £ | Year ending | | £ |
|----------------|-----|------------|---------------|-----|------------|
| Sept. 30, 1868 | ... | 121,000 | Sept. 1890 | ... | 2,600 |
| Dec. 31, 1869 | ... | 103,000 | " 1891 | ... | Not stated |
| " 1870 | ... | — | " 1892 | ... | 2,800 |
| " 1871 | ... | — | " 1893 | ... | 2,300 |
| Sept. 30, 1872 | ... | 103,000 | " 1894 | ... | 300 |
| " 1873 | ... | 130,000 | " 1895 | ... | 700 |
| " 1874 | ... | 66,000 | " 1896 | ... | 900 |
| " 1875 | ... | 40,000 | June 30, 1897 | ... | 700 |
| " 1876 | ... | 28,000 | " 1898 | ... | 130 |
| " 1877 | ... | 16,000 | " 1899 | ... | 580 |
| " 1878 | ... | 14,000 | " 1900 | ... | 130 |
| " 1879 | ... | 11,000 | " 1901 | ... | 310 |
| 1880-1889 | ... | Not stated | " 1902 | ... | 180 |

SHEARS.

| Year ending | | £ | Year ending | | £ |
|---------------|--------|--------|-------------|--------|------------|
| Dec. 31, 1869 | ... .. | 2,600 | 1880-1900 | ... .. | Not stated |
| „ 1870 | ... .. | — | June 1901 | ... .. | 1,260 |
| „ 1871 | ... .. | — | „ 1902 | ... .. | 11,400 |
| Sept. 1872 | ... .. | 5,500 | „ 1903 | ... .. | — |
| „ 1873 | ... .. | — | „ 1904 | ... .. | — |
| „ 1874 | ... .. | 5,800 | Dec. 1905 | ... .. | 9,000 |
| „ 1875 | ... .. | 10,000 | „ 1906 | ... .. | 11,400 |
| „ 1876 | ... .. | 8,700 | „ 1907 | ... .. | — |
| „ 1877 | ... .. | 8,600 | „ 1908 | ... .. | 11,400 |
| „ 1878 | ... .. | 10,600 | „ 1909 | ... .. | 12,000 |
| „ 1879 | ... .. | 8,400 | „ 1910 | ... .. | 12,000 |

II. GERMANY.

TABLE A.

CUTLERY (KNIVES, SCISSORS, FORKS, CORKSCREWS, NUTCRACKERS, SWORDS).

£1 = Mk. 20.43.

| | | 1909. | 1910. | 1911. |
|-----------------|--------|------------|------------|------------|
| | | Marks. | Marks. | Marks. |
| Total Imports | ... .. | 563,000 | 530,000 | 577,000 |
| Total Exports | ... .. | 22,336,000 | 25,702,000 | 28,421,000 |
| Exports to— | | | | |
| Great Britain | ... .. | 1,165,000 | 958,000 | 1,590,000 |
| Italy | ... .. | 858,000 | 958,000 | 875,000 |
| The Netherlands | ... .. | 664,000 | 743,000 | 736,000 |
| Austria-Hungary | ... .. | 1,115,000 | 1,342,000 | 1,777,000 |
| European Russia | ... .. | 1,933,000 | 2,048,000 | 2,307,000 |
| Switzerland | ... .. | 822,000 | 937,000 | 797,000 |
| British India | ... .. | 970,000 | 1,078,000 | 1,138,000 |
| Argentina | ... .. | 1,077,000 | 1,905,000 | 2,139,000 |
| Brazil | ... .. | 742,000 | 1,711,000 | 1,793,000 |
| Canada | ... .. | 782,000 | 654,000 | 610,000 |
| U.S.A. | ... .. | 5,998,000 | 5,353,000 | 5,538,000 |

TABLE B.

FILES AND RASPS.

| | | 1909. | 1910. | 1911. |
|---------------|--------|-----------|-----------|-----------|
| | | Marks. | Marks. | Marks. |
| Total Imports | ... .. | 338,000 | 609,000 | 798,000 |
| Total Exports | ... .. | 3,076,000 | 5,678,000 | 4,697,000 |

III. FRANCE.

TABLE A.

EXPORTS AND IMPORTS OF CUTLERY.

£1 = Fr. 25.22.

| | | | | EXPORTS. | IMPORTS. |
|------------------|-----|-----|-----|-----------|-----------|
| | | | | Fr. 000's | Fr. 000's |
| 1902 | ... | ... | ... | 5,023 | 546 |
| 1903 | ... | ... | ... | 4,947 | 536 |
| 1904 | ... | ... | ... | 5,185 | 531 |
| 1905 | ... | ... | ... | 5,570 | 616 |
| 1906 | ... | ... | ... | 6,806 | 626 |
| 1907 | ... | ... | ... | 7,828 | 627 |
| 1908 | ... | ... | ... | 5,872 | 661 |
| 1909 | ... | ... | ... | 5,962 | 685 |
| 1910 | ... | ... | ... | 7,313 | 842 |
| 1911 | ... | ... | ... | 8,332 | 998 |
| 1912 (11 months) | ... | ... | ... | 8,402 | 1,003 |

TABLE B.

PERCENTAGE OF CUTLERY EXPORTS AND IMPORTS, 1911.

| EXPORTS. | | | | IMPORTS. | | | |
|--------------------|-----|-----|------|--------------------|-----|-----|------|
| By Weight. | | | | By Weight. | | | |
| To Great Britain | ... | ... | 2.2 | From Great Britain | ... | ... | 10.0 |
| Germany | ... | ... | 6.2 | Germany... | ... | ... | 77.7 |
| Belgium... | ... | ... | 15.0 | United States | ... | ... | 5.2 |
| Argentine Republic | ... | ... | 11.4 | | | | |
| United States | ... | ... | 5.6 | | | | |
| French Colonies | ... | ... | 25.0 | | | | |

IV. AUSTRIA

TABLE A.

EXPORTS OF CUTLERY, 1912.

£1 = Kr. 24.

| | | | | |
|--|-----|-----|-----|-----------|
| Cutlery wares, cast, pressed, or forged—in the rough | ... | ... | ... | Kronen. |
| Knives and shears for industrial purposes— | | | | 1,850 |
| | | | | Kronen. |
| To Germany | ... | ... | ... | 183,300 |
| Russia | ... | ... | ... | 165,000 |
| Turkey in Europe | ... | ... | ... | 112,000 |
| Total | ... | ... | ... | 741,000 |
| Scissors | ... | ... | ... | 37,000 |
| Pocket knives— | | | | |
| To Germany | ... | ... | ... | 206,000 |
| Hamburg | ... | ... | ... | 365,000 |
| Italy | ... | ... | ... | 148,000 |
| Rumania | ... | ... | ... | 189,000 |
| Total | ... | ... | ... | 1,448,000 |
| Other cutlery | ... | ... | ... | 222,000 |
| Total exports | ... | ... | ... | 2,449,850 |

TABLE B.

IMPORTS OF CUTLERY, 1912.

| | | | | |
|--|-----|-----|---------|-----------|
| Cutlery wares, cast, pressed, or forged—in the rough ... | ... | ... | Kronen. | 51,000 |
| Knives and shears for industrial purposes— | | | | |
| From Germany... | ... | ... | Kronen. | 1,180,000 |
| United States | ... | ... | | 127,000 |
| Total... | ... | ... | | 1,411,000 |
| Scissors—from Germany | ... | ... | | 722,000 |
| Total... | ... | ... | | 731,000 |
| Pocket knives—from Germany | ... | ... | | 378,000 |
| Total... | ... | ... | | 386,000 |
| Other cutlery—from Germany | ... | ... | | 457,000 |
| Total... | ... | ... | | 498,000 |
| Total imports | ... | ... | ... | 3,077,000 |

V. UNITED STATES.

TABLE A.

EXPORTS OF CUTLERY.

(Calendar Years.)

£1 = \$4.86½.

| | 1907. | 1908. | 1909. | 1910. | 1911. | 1912. |
|-----------------------|---------|---------|---------|---------|---------|---------|
| | \$000's | \$000's | \$000's | \$000's | \$000's | \$000's |
| Table cutlery ... | 76 | 51 | 63 | 997 | 79 | 192 |
| All other cutlery ... | 663 | 827 | 777 | | 1,036 | 1,004 |
| Total ... | 739 | 878 | 840 | 997 | 1,115 | 1,196 |

TABLE B.

IMPORTS OF CUTLERY.

(Years ending June 30th.)

| | 1908. | 1909. | 1910. | 1911. |
|--------------------|---------|---------|---------|---------|
| | \$000's | \$000's | \$000's | \$000's |
| From Germany ... | 1,515 | 1,293 | 1,312 | 1,444 |
| United Kingdom ... | 377 | 361 | 381 | 421 |
| France ... | 59 | 25 | 53 | 59 |
| Total Imports ... | 2,018 | 1,733 | 1,806 | 1,993 |

IMPORTS, 1912.

| | Pen and Pocket Knives. | Razors. | Scissors and Shears. | All other Cutlery. | Total. |
|---------------------|------------------------------|----------------|----------------------------|-----------------------|------------------|
| From Germany | \$000's 627 | \$000's 362 | \$000's 481 | \$000's 96 | \$000's 1,566 |
| United Kingdom ... | 151 | 30 | 72 | 103 | 356 |
| France | 6 | 1 | 8 | 43 | 58 |
| Total Imports ... | 814 | 397 | 564 | 260 | 2,035 |

VI. CANADA.

IMPORTS OF CUTLERY.

$$£1 = \$4.86\frac{1}{2}.$$

| | 1906. | 1907. (9 mths.). | 1908. | 1909. | 1910. | 1911. |
|----------------------------|----------------|---------------------|----------------|----------------|----------------|------------------|
| Total Imports | \$000's 739 | \$000's 570 | \$000's 949 | \$000's 630 | \$000's 787 | \$000's 1,043 |
| Pen and pocket knives ... | 143 | 72 | 132 | 103 | 75 | 100 |
| Steel knives and forks ... | 260 | 221 | 319 | 168 | 201 | 264 |
| Cutlery N.O.P. | 336 | 277 | 498 | 359 | 509 | 679 |
| From United Kingdom ... | 419 | 327 | 544 | 346 | 438 | 594 |
| Germany | 163 | 140 | 259 | 156 | 186 | 249 |
| United States ... | — | — | 131 | 120 | 152 | 185 |

VII. COMMONWEALTH OF AUSTRALIA.

IMPORTS OF CUTLERY.

| | 1906. | 1907. | 1908. | 1909. | 1910. |
|-------------------------|----------------|----------------|----------------|----------------|----------------|
| Total Imports... .. | \$000's 311 | \$000's 381 | \$000's 343 | \$000's 378 | \$000's 463 |
| From United Kingdom ... | 265 | 318 | 285 | 320 | 394 |
| Germany | 22 | 32 | 26 | 28 | 32 |
| United States | 19 | 29 | 30 | 28 | 35 |

General Tariff from May 27, 1908, 15 per cent. ad val.

Preferential Tariff from May 27, 1908, 10 per cent. ad val.

VIII. BRITISH SOUTH AFRICA.

IMPORTS OF CUTLERY.

| | 1906. | 1907. | 1908. | 1909. | 1910. |
|-------------------------|--------|--------|--------|--------|--------|
| | £000's | £000's | £000's | £000's | £000's |
| Total Imports... .. | 69 | 57 | 61 | 70 | 94 |
| From United Kingdom ... | 51 | 43 | 41 | 54 | 69 |
| Germany | 14 | 10 | 13 | 10 | 18 |
| United States | 2 | 3 | 5 | 5 | 4 |

IX. INDIA.

IMPORTS OF CUTLERY.

| | 1906-7. | 1907-8. | 1908-9. | 1909-10. | 1910-11. |
|-------------------------|---------|---------|---------|----------|----------|
| | £000's | £000's | £000's | £000's | £000's |
| Total Imports | 94 | 122 | 117 | 98 | 142 |
| From United Kingdom ... | 58 | 62 | 61 | 56 | 74 |
| Germany | 15 | 22 | 18 | 11 | 15 |
| Belgium | 14 | 22 | 33 | 26 | 41 |

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